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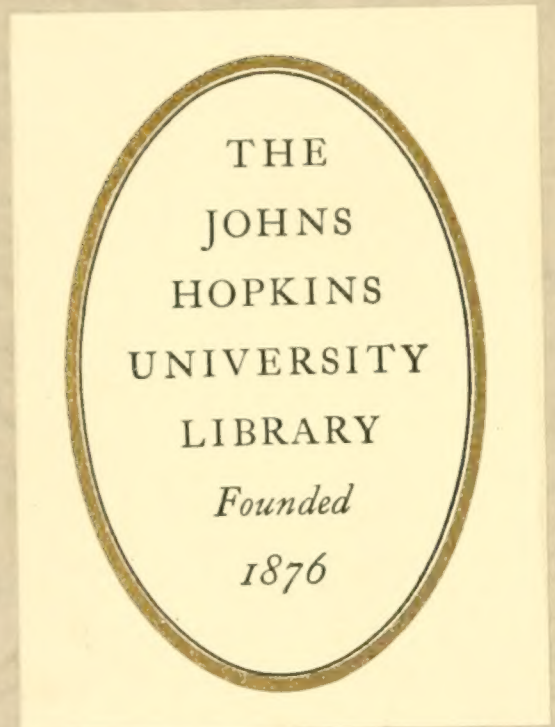
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FACTORS ASSOCIATED WITH THE ACHIEVEMENT OF HIGH SCHOOL PUPILS OF SUPERIOR INTELLIGENCE

A Study of Superior Pupils in Five White Secondary Schools of Baltimore, Maryland

by

John W. Musselman

A dissertation submitted to the Committee on Degrees of Master of Education and Doctor of Education of the Johns Hopkins University in conformity with the requirement of the degree of Doctor of Education.

Baltimore
1942

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To my wife

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John W. Musselman

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PREFACE

Why do intelligent pupils often fail or do mediocre work? What are the causes or factors associated with the achievement of superior pupils in secondary schools? Why do some superior pupils do good work in high schools and others of equal intelligence do poor work? These, and other questions have challenged the author in his dealings with pupils as a principal's assistant in a large coeducational junior-senior high school in Baltimore.

It is not difficult to understand why the mentally slow pupil may have some difficulty with the curricula of our high schools but it is another thing to explain why a highly intelligent pupil will do below-average work. Others whose work will be reviewed have wrestled with this problem but it continues to deserve our consideration, for superior pupils are still working far below their capacities in schools throughout the world. A mere comparison of any school's roll of highly intelligent pupils with its scholastic honor roll would prove this point. Schoolmen should more adequately meet this problem of stimulating and assisting the superior pupil more closely to match his intelligence with achievement and if there is any better solution, seek it further until it is found.

New techniques and finer instruments are emerging with which we may more effectively study such factors as study habits, physical health, social status, economic status, personality traits, adjustment to environment, interests, background, and other variables which may supply better answers to our questions. With these aids at hand to utilize, the author has felt the urge to search for the answer to this problem.

The problem is stated, "What are the factors associated with the achievement of high school pupils of superior intelligence?"

Terms Defined:

High school pupils — in this study, high school pupils include only white pupils attending grades nine to twelve in the Baltimore public schools.

Of superior intelligence — pupils who have an I. Q. of 120 or more, as measured by two forms of the Otis Self-Administering Test of Mental Ability, Higher Examination, and one form of the Henmon Nelson Test of Mental Ability.

CHAPTER I

PREVIOUS STUDIES OF SUPERIOR PUPILS WHO DO NOT ACHIEVE UP TO THEIR CAPACITIES

Introduction

Identification of Gifted and Superior Children

Individual Cases

Studies of Groups -- Relation of Various Factors to Achievement

- Antecedents' Country of Birth
- Family Relationships
- Foreign Languages Spoken in the Home
- Health
- Home Discipline
- Parents' Education
- Personality and Achievement
- Sibling Relationships
- Size of Family
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- Study Habits
- School Provisions for Superior Pupils

Summary of Previous Studies

The Relation of this Study to Previous Studies

CHAPTER I

PREVIOUS STUDIES OF SUPERIOR PUPILS WHO DO NOT ACHIEVE UP TO THEIR CAPACITIES

Introduction

Educators have long admitted that attention and special help should be given gifted children. Du Pont de Nemours stated in 1800 in his "National Education in the United States":

> A single day of an educated man of genius is of more value to the world than the labor of 100,000 men for a year.

The late Leta S. Hollingworth[1] has written:

> Education is charged with responsibility for the development of gifted children. It is the professional duty of educators to understand this group much more fully and precisely than they do yet.

On the other hand, many others (including educators) have believed that because the superior child is usually able to do average work, he needs no special aid or attention.

Only recently, however, has any systematic study been made of the superior pupil. In the 1920's, Terman[2] and his assistants made an exhaustive study of gifted children, their physical and mental traits. The findings indicated that the mean of the gifted group was above that of unselected children in educational achievement, in health and physique, in desirable personality traits and in proportion of near relatives who had made notable contributions. In Vol. II of this series, Catherine M. Cox[3] made biographical sketches of the childhood traits of three hundred outstanding

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1 Hollingworth, Leta S. "Gifted and Talented Children". Journal of Educational Research, 6: 65, October, 1936.

2 Terman, Lewis M. and others. Mental and Physical Traits of a Thousand Gifted Children. Genetic Studies of Genius, 1. Stanford University Press, California, 1925, 640 pp.

3 Cox, C. M. and others. The Early Traits of Three Hundred Geniuses. Genetic Studies of Genius, 2. Stanford University Press, California, 1926. 741 pp.

geniuses of history. They had all exhibited superior intelligence in childhood as well as in later life. In Vol. III of the series,, B. S. Burks,[4] L. M. Jensen, and L. M. Terman and others, in a continuation study of gifted children, found that the traits of gifted children are relatively permanent. What was true of the group studied in 1921-22 was largely true of the same group in 1927-28.

Preliminary Statement -- Identification of Gifted or Superior Groups

Terman[5] used an I. Q. (Stanford-Binet) of 140 as a lower limit for his gifted group. Hollingworth[6] used as her criterion for pupils of superior intelligence the most intelligent 1 per cent of the juvenile population. Her lower limit, calculated on this basis for superior pupils, was an I. Q. of 130. Goddard[7] used 120 I. Q. as a lower limit in forming classes for gifted children. Osburn and Rohan[8] included those with special talents -- artistic and mechanical, with no special limit on I.Q., while Bentley[9] used 110 I. Q. for determining the gifted group.

When the Revised Stanford-Binet Scales[10] appeared in 1937, the authors classed as superior only those children having I. Q.'s of at least 120 (the highest 12.6 per cent of an unselected group), and as "very superior" only those with I. Q.'s of 140 or higher (the highest 1 per cent, roughly)"[11]

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4 Burks, Barbara Stoddard and others, The Promise of Youth: Follow up Studies of a Thousand Gifted Children: Genetic Studies of Genius, 3, Stanford University Press, 1930. 508 pp.

5 Terman, Lewis M. op. cit. p. 45

6 Hollingworth, Leta S. Gifted Children: Their Nature and Nurture. Macmillan Co. 1926, 374 pp.

7 Goddard, H. H. School Training of Gifted Children. World Book, 1928,226 pp.

8 Osburn, W. J., Rohan, Wm J., Enriching the Curriculum for Gifted Children, N. Y. Macmillan Co., 1931, 400 pp.

9 Bentley, John Edward. Superior Children. W. W. Norton & Co. N.Y., 1937, 331 pp.

10 Merrill, Maud A. "The Significance of I. Q.'s on the Revised Stanford-Binet Scales." Journal of Educational Psychology 29: 641-51;
Anonymous, "Characteristics of Superior Students"

11 National Educational Association Research Bulletin, 19:100; Sept. 1941.

INDIVIDUAL CASES

The individual pupil possessing superior intelligence but doing poor school work has been investigated by earlier research workers. Conklin,[12] reporting on three early studies of intelligent individuals who failed, made this observation that in each individual case, clinical study has resulted in locating factors associated with poor school adjustment and in prescribing an effective remedial program. Other investigators are in general agreement with this finding. Two typical studies of individual cases are included to illustrate this point.

Hollingworth[13] presents the case of Child A. On the advice of his school principl, because he was a school problem, his parents brought him to the clinic for mental tests. He was not adjusting well in the second grade where, at the age of 6 years, 6 months, he had a Stanford-Binet I. Q. of 167. His great-grandparents were German-Jews, his father was an engineer and architect of ability with an Army Alpha I. Q. of 180. A's mother was graduated from high school. Before marriage she was an executive in charge of advertising, and at one time she had done some newspaper work. The family in general was noted for outstanding achievements. A could talk at 10 months; at 12 months he could say the alphabet forward; and at 16 could say the alphabet backwards. He learned to read during his third year and preferred true stories of adventure. A has always been healthy; his adenoids and tonsils were removed at 6 years of age. Physical examination revealed no defects except myopia, for which he wore glasses.

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12 Conklin, Agnes M. Failures of Highly Intelligent Pupils, a Study of Their Behavior by Means of the Control Group. Teachers College, Columbia University, Columbia Bureau of Publications #792, p. 3-6, 1940

13 Hollingworth, Leta S. Gifted Children: Their Nature and Nurture, Macmillan Company, 1926. pp. 240-52.

He had attended only private schools, where he had always been a problem to his teachers. He was not interested in school work even 2 or 3 years beyond the norm for his age, and he was too small and too young to participate successfully in the social life for which his mental ability fitted him. He was absentminded, untidy, slow to take advice, but good-humored, honest, self-controlled, and precise in habit of thinking. It was decided to advance A in school at a rate representing a compromise between intellect and other aspects of his developing personality. A seems to be doing quite well under this treatment.

Bentley[14] cites several interesting clinical studies of maladjusted gifted children. Amy had a chronological age of 8 years, 8 months, a mental age of 13 years, 6 months, an I. Q. of 160, and was in grade 5 of the Washington, D.C. schools. She had difficulty from the time she was in the nursery school, and became progressively worse until she reached the 6th grade. The principal then recommended her referral to the Child Guidance Clinic. She was described as the "most difficult child in school". She was reported to be impertinent, stubborn, and irresponsible. In class she would grin, giggle, talk back to the teacher, do anything to attract attention to herself. Her present teacher proposed that another school might be the solution to her problem -- that she had given up hope.

At the clinic the child's mother suggested that the child was too bright for the class she was in and didn't get along with her classmates because they felt she knew too much. At home Amy was irresponsible, untidy and generally disagreeable. In the discussion with the physician-

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14 Bentley, John Edward. Op. cit. pp 313-314.

trist, Amy said that the teacher was too strict, and she felt that she was unwanted by her classmates.

Psychological examination indicated that she was 5 years accelerated in mental age and possessed a remarkable memory. Amy was accelerated in school, but she was still far above the average of her present grade. On the clinic's recommendation, further school promotion was resorted to, which resulted in a decided improvement in her case. Her school attitude is quite satisfactory and she gets along well with her classmates and teachers. She has no difficulty in keeping up with the school work.

Both of these cases above illustrate how clinical study has resulted in a satisfactory adjustment for maladjusted superior children whose performance was below the promise offered by their intelligence.

STUDIES OF GROUPS

Groups of students possessing high intelligence quotients but failing or doing mediocre school work have been studied, but research has not been so successful in finding the causes or prescribing the remedy for types of maladjustment found. The difficulty lies in the fact that, when dealing with groups, factors of heterogeneity are introduced which are not present in the study of an individual case, although through the study of groups it is possible to obtain useful generalizations which may be applied to similar groups in the future. Students in the field of education have studied this problem with varying degrees of thoroughness and with conflicting conclusions. Many varied explanations have been arrived at for the discrepancy between promise and performance.

A number of books summarizing research on the achievement of superior pupils have recently been published. The writer's intention is to summarize the conclusions regarding the variables to see investigated as found in these summaries. In addition, pertinent and recent conclusions of other authors, omitted from the summaries for one reason or another, will be added. The variables will be treated in alphabetical order.

Antecedents' Country of Birth

Recent studies indicate that the performance of children of foreign born parents approaches more closely the promise given by their intelligence than does the performance of children of native born parents.

Desing,[15] reporting on the studies of 4 other investigators, found that achievement of children of foreign born parents, particularly in college, was slightly superior to that of students with native born parents. From her own study of superior elementary pupils Desing found that pupils of foreign parentage gained more in achievement and were more frequently found in the highest deciles of achievement, when compared with pupils whose parents were American born.

Clark[16] suggests that selective factors are probably operating in such a way as to make the children of foreign born parents expend more effort to overcome language and cultural differences, and thereby do slightly better work.

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15 Desing, Minerva F. The Relation of Pupil Achievement Gains to Certain Personal and Environmental Elements. pp. 91, 107, 142, 144, University of Pennsylvania, Dissertation, Philadelphia, 1940.

16 Clark, K. L. "Family Background and College Success." School and Society, 45: 177-178. February 15, 1937.

Strabel,[17] in a study at the University of Buffalo, found that a greater percentage of superior students have foreign born parents than do inferior students. She agreed with Clark that this could be accounted for on the basis that the pupils of foreign parentage were probably more highly motivated.

Conklin,[18] in comparing two groups of pupils of superior intelligence (one group characterized by failures in secondary school), concluded that the parents of both groups, almost 70 per cent of whom were immigrants, have lived in America for approximately the same length of time. The paternal grandparents of the failing pupils have resided in America a significantly longer time than the paternal grandparents of the successful pupils. There was no real difference in the recency of immigration for the maternal grandparents.

Conklin's findings are in disagreement with most investigators. This may be accounted for by the fact that such a high percentage of her group were pupils of foreign parentage. Possibly, pupils who live in a predominantly foreign community are not so highly motivated to achieve up to their capacities as are pupils who live in a predominantly American community.

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17 Strabel, Eunice. "Academic Success of Various Age and Experience Groups". Studies in Articulation of High School and College, University of Buffalo Studies Series II, Bulletin 3, Vol. XIII, 1936.

18 Conklin, Agnes. op. cit. p 113.

Family Relationships

Broken families or an unhappy home atmosphere usually has a detrimental effect on school achievement in the opinion of most investigators.

Investigations studied by Gesing[19] indicate close associations between pupil maladjustment and maladjusted family relationships. Broken families seemed to be an important factor associated with retarded achievement of superior pupils. 62 per cent of these maladjusted pupils studied by Gursch[20] were not living with both parents. 42 per cent were living with their mother only.

Conklin's[21] findings from the study of family relationships are all unfavorable to the failing superior pupils. Discipline employed by families, the child's selection of his companions, and the subsequent disapproval of them by his parents; all these factors probably contribute to the failing status of superior pupils in high school. Conklin's data also indicate that:

> The combination of the typical character of the family, family discipline, and the relationship between the child and his parents is a configuration that produces an unfavorable effect upon the experimental group. (failing superior pupils)

Gesing[22] found pupils who ranked in the highest deciles of achievement had parents belonging to clubs and to Parent Teacher Associations in larger numbers than parents of the pupils in the lowest deciles. Gesing also concluded from her study that the families of

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19 Gesing, Minerva F. op.cit. p. 18

20 Gursch, James F. "Home and Community Conditions Related to Pupil Maladjustment", Personality Adjustment of the Elementary School Child, The National Elementary School Principal, Bulletin of the Dept. of Elementary School Principals, N.E.A. 15:320-325, July 1936

21 Conklin, Agnes op.cit. p. 111.

22 Gesing, Minerva F. op. cit. p. 144.

children who were problem cases were larger, and she observed that the problem cases usually came more frequently from unnatural homes.

Desing's[23] study led her to the conclusion that children of divorced parents gained less in achievement than those from normal homes. Most of the children studied by Desing[24] were said to be on close friendly terms with their parents. A few were merely respectful, indicating a courteous and disciplined but formal relation, while a very few were assigned other categories.

The majority of the pupils in all groups studied showed a general lack of preference for either parent over the other. Usually when preference was shown, it was for the mother, among both boys and girls.

Conklin[25] on the other hand, found that there were no reliable differences between successful and failing pupils in the separation of parents, quarreling of parents, and general inharmonious relationships between parents.

Regensburg[26] studied 50 cases of intellectually superior children referred to the Bureau of Children's Guidance of New York City, with particular emphasis on the factors associated with school success or failure. Her findings indicate that:

> Granted superior intellectual endowment, school success is more fully assured (1) if the child's experiences at home, while satisfying, nevertheless induce him to face weaning experiences from an early age in order to

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23 Desing, Minerva P., op. cit. p 107
24 Ibid. p 121
25 Conklin, Agnes. op. cit. p 120
26 Regensburg, Jeanette. Studies of Educational Success and Failure in Supernormal Children. Archives of Psychology, No. 129, p 137. New York, May. 1931.

insure social independence; and (2) if he is encouraged to be active, interested in the world outside him, and eager to make contact with the people in it.

Foreign Language Spoken in the Home

There is general disagreement regarding the relationship between achievement and the use of a foreign language in the pupil's home. Some investigators find no relationship and others find that a foreign language spoken in the home offers no handicap to the scholastic achievement of superior pupils.

In her study, Desing[27] found large numbers of pupils in whose homes a foreign language was spoken in the group representing the highest 10 per cent in achievement. She especially found that there was a tendency toward a greater achievement gain among children in whose homes a foreign language was habitually spoken.

Conklin[28] again disagreed, concluding in the study of successful superior students as compared to unsuccessful superior students, that foreign languages were spoken in the homes of both groups to about the same extent.

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27 Desing, Minerva F. op. cit. p. 144.
28 Conklin, Agnes, op. cit. p. 113

Health and Physical Traits.

There is little agreement, too, concerning the relationship between achievement and health, including physical traits. This appears to be true whether intelligence is held constant or not.

The findings of several authors on the relation of intelligence or mental development to health and physical traits have been included here by way of introduction.

Paterson[29] states in his Summary and Conclusions that:

> "Our detailed survey of available quantitative evidence has demonstrated that prevalent notions regarding the intimacy of the relationship between physical traits and intellect have been grossly exaggerated. Search in the realm of gross anatomy for a physical correlate of intellect has yielded uniformly negative results. It appears that such structural characteristics as height and weight are correlated only slightly with intelligence, narrowly defined."

According to Paterson[30] head size, skeletal development, dentition, physiological development measured in terms of pubescence, indices of body build, and even physical defects are found to be relatively unrelated to mental development.

The evidence seems quite clear that mental development proceeds in relative independence of physical condition except when disease processes or injuries directly attack the central nervous system, especially the higher centers.[31]

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29 Paterson, Donald G., Physique and Intellect; The Century Co. New York, 1930, 304 pp. p. 269
30 Ibid, p. 269
31 Ibid, p. 269-70

England,[32] in a study of [illegible] rural children in Lincolnshire, reported no relationship between intelligence and the total incidence of tonsilar disease. There was, however, a larger percentage of tonsillectomies among those of superior intelligence. These total incidence figures were similar to those reported by Terman for American children of high I. Q.

Stout,[33] studying pupils ten years old, found that "the fact that a child is normal in intelligence gives little or no clue to what his health or physical condition may be."

Jones[34] states in the February 1939 Review of Educational Research that, "It is now well established that a low positive correlation, rarely higher than .30, exists between the intelligence of children and their physical development as represented, for example, in measures of height or weight."

In the same summary Jones[35] sets down several hypotheses concerning the nature of this relationship.

"1. A common biological factor or group of factors may favor superior development of the total organism; absence of these factors may have a generally handicapping effect."

"2. Disease effects or the effects of birth injury, malnutrition, etc., may be expressed both in the brain and in other organs with parallel disturbances in later development.

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32 For this reference see Jones, Harold E., "Relationships in Physical and Mental Development." Review of Educational Research 9:97, February 1939.
33 Ibid. p. 97
34 Ibid. p. 135
35 Ibid. p. 136

"3. Any condition producing an arrest or distortion in the growth of intelligence or of the central integrative functions may thereby indirectly handicap the normal development of other functions and other structures."

"4. Social advantages or handicaps may simultaneously influence physical development (through nutrition and regimen) and mental development (through education)."

"5. Physical-mental relationship may not be due primarily to a correlation of superior or inferior status, but to a correlation of rates of growth; in this latter case, relationships would be expected to diminish in degree at the end of the growth period."

As Jones states, these hypotheses are receiving considerable attention and their relative importance will be determined by further investigation.

As can be seen from the introductory paragraphs given above on the relation of physical development to mental development, slight agreement exists. There is apparently only a small positive relation existing between physical development and mental development as described above.

The Encyclopaedia of Educational Research summarizes with this pointed statement:

> At one time physical unfitness was commonly believed to be characteristic of the intellectually gifted child, but there is now much objective evidence to refute this hypothesis.[36]

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36 Monroe, Walter S., Encyclopaedia of Educational Research, Macmillan Company, N. Y., p. 77. (This is taken from Hollingworth, Leta., Gifted Children: Their Nature and Nurture, Macmillan, 1926.)

We will next take up the relation between achievement and health, including physical traits. Several studies indicate that health or physical traits have little effect upon the achievement of superior pupils.

Eckert and Mills[37] find the data on health and health attitudes differs little between two groups of intelligent high school seniors, one group superior, and the other inferior in achievement.

These groups were, moreover, reliably different in the number of physical disabilities they had experienced during the high school period. Interesting enough, the more numerous and more severe physical handicaps had been experienced by the superior control group of achieving pupils.

Dr. Conklin[38] concluded, in her study of 100 high school pupils of intelligence ranging from 130 to 160, that throughout their lives up to the high school period physical handicaps do not distinguish significantly between pupils of superior intelligence who are doing good work in high school, and pupils of superior intelligence who are doing failing work in high school.

Jones,[39] reporting on several studies, said that Droque found a maximum correlation of -.25 between school grades and I. Q. with physical fitness. Jones also reported that Street,[39] in comparing mentally superior with average pupils in a Michigan elementary school, found no difference in physical fitness.

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37 Eckert, Ruth E. and Mills, Henry C., "Variations Among High School Seniors in Promise and Performance Measures." School Review, 44: 274-282. April, 1936.

38 Conklin, Agnes, op. cit. p. 114, 115.

39 Jones, Harold E., op. cit. p. 97

Considerable evidence has been found indicating that the opposite is true - that physical fitness is associated with and characteristic of the mentally superior child who is doing well in school.

Keal[40] feels that health is the most important factor associated with school achievement. His findings indicate that wherever physical defects are corrected, school achievement improves.

Investigations summarized by Desing[41] indicate that there is a positive relationship between health and school success. Six studies all indicate that various health factors and physical defects are responsible in some measure for inferior achievement of superior pupils.

Hollingworth[42] brings out the relationship between certain defects or talents to achievement in particular fields. Nervous instability and word blindness may decrease reading abilities of one pupil, while the same pupil may be talented in other fields.

Baker[43] states that:

> In general health, in physique, and in ideals of sportsmanship, bright pupils appear to excel all other groups.

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40 Keal, Henry M., "Mental Ratings, Scholarship, and Health." School and Society, 28: 277-280. September 1, 1928.

41 Desing, Minerva F. op. cit. p. 17

42 Hollingworth, Leta S., Special Talents and Defects, Macmillan Company, 1923. 216 pp.

43 Baker, Harry J., Characteristic Differences in Bright and Dull Pupils. Public School Publishing Company, Bloomington, Illinois, 1927. p. 85.

Lewis, as reported by Jones,[44] found among grade repeaters in North Carolina a positive relationship between school failures and possession of physical defects such as uncorrected visual defects, defective tonsils, and defective teeth; defective nutrition was a less prominent classification.

To sum up, considerable agreement exists concerning the relation of physical development to mental development. If any such relation exists it is probably of small degree.

On the other hand, when the relation of physical fitness to school achievement (without intelligence held constant) is concerned, there is general disagreement. Some investigators find no relationship and others find poor health and physical defects associated with poor achievement even with pupils of superior intelligence.

Further research will evidently be necessary to clear up many aspects of the relation of health and physical traits to achievement.

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44 Jones, Harold E., op. cit. p. 97.

Home Discipline

Very little investigation has been made of the relationship between home discipline and the achievement of superior pupils. The evidence indicates that pupils who are problems in school are nearly always problems at home.

Desing[45] observed in the study of 1150 cases that the children who were problems at school were also more frequently punished at home. Parents were consistent in indicating the most frequent types of punishment to be deprivation, reprimand and corporal punishment, in the order specified.

Parents' Education

There is considerable disagreement among investigators regarding the relationship between the amount of parents' education and the achievement of pupils. Little of a conclusive nature has been found regarding this variable.

By way of illustration, five investigations reported by Desing[46] disagree on the effect of parents' education upon achievement. Clark[47] and Smith[48] agree that pupils whose fathers have more

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45 Desing, Minerva F. op. cit. pp. 144, 121.
46 Desing, Minerva F. op. cit. p. 20
47 Clark, E. L. op. cit. p. 257
48 Smith, Harry P. "Factors Related to Academic Achievement" (Abstract). Practical Values of Educational Research. American Educational Research Association Report, May 1938. p. 27.

education are likely to achieve less in college. Smith, however, finds the education of mothers positively related to academic achievement. Williamson[49] and Douglass and Campbell,[50] on the other hand, find that pupils who are doing poor work in high school and college have parents who have less schooling than the average.

In her own study, Desing[51] discovered a slightly negative relation between the achievement gain and the father's education, while there was a positive relation between the achievement gain of a pupil and his mother's education.

Personality and Achievement

There are conflicting reports concerning the relation of personality with performance up to promise in school. Good social adjustment appears to be associated with high intelligence. The relation of achievement in school to personality traits or social adjustment is in question, and even more uncertain is the association between personality and how closely achievement approaches the promise of intelligence. Stagner[52] says, "Linear correlations of intelligence, achievement and personality measures are low and are probably so as a result of the inherent nature of the relationship." The relation to be studied may be divided into three parts: the relation between personality and intelligence; personality and achievement; and personality and achieving up to promise (intelligence held high and constant).

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49 Williamson, E. G., "The Significance for Educational Guidance of Personal Histories." School Review, 44: 4, 49. January, 1936

50 Douglass, Earl M., Campbell, Ina, "Factors Related to Failure in a Minneapolis Junior High School," Elementary School Journal, 37: 136-146. November, 1936.

51 Desing, Minerva F., op. cit. p. 107.

52 Stagner, Ross, "The Relation of Personality to Academic Aptitude and Achievement." Journal of Educational Research, 26: 648-660 May, 1933.

The relation between personality and intelligence will be taken up first by way of introduction.

The National Education Association Research Bulletin[53] reports on the social, emotional, and moral traits of mentally superior children. They tend naturally to associate with others of similar mental age rather than those of similar chronological age and are chosen as leaders more often than average children. They behave well in group activities, but spend more time in individual activities. They are less inclined to nervous disorders and generally, when social maladjustment occurs, the cause should be sought in the child's home and school environment as well as in his physical condition.

There is considerable evidence to indicate that superior intelligence is positively associated with superior personality adjustment. According to Monroe,[54] "Research on gifted children has shown good social adjustment to be associated with high intelligence". Hollingworth [55] found that gifted children rated as well as unselected children in emotional stability and that there are fewer neuretics among them than among other groups.

> Most authorities take the position that the personality of a given individual is the resultant of an interaction between genetic and environmental factors. . . Most theories of personality disturbance are based upon a thwarting or frustration of drives. Freud stresses the 'thwarting of pleasurable sensations of the body', Adler stresses 'conflict between individual striving and social mores' . . .Sometimes the conflict is due to physical limitation, sometimes to the social setting.[56]

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53 Anonymous, "Characteristics of Superior Students", National Education Association Research Bulletin, Vol. XIX, No. 4, p.160 September, 1941.

54 Monroe, Walter S. op. cit. p.77

55 Hollingworth, Leta S. Gifted Children: Their Nature and Nurture, Macmillan Co. 1926, 374 pp.

56 Monroe, Walter S. op. cit. p. 78. No specific reference is given.

Dosing[57] found in her study that the great majority of problem cases were in the low intelligence group and that there were more boys than girls. There is considerable evidence, however, that, with or without school success, pupils of superior intelligence are found among maladjusted groups. Conklin[58] notes that in her study there are 4 times as many maladjusted pupils among her 100 cases of superior students than would be expected in normal school population.

Payne and Perry[59] came to the conclusion that "some of these students who make high (I.Q.) scores have emotional difficulties, personality maladjustments . . . and are satisfied with the 'gentleman's mark of C'".

The Clinic for the Social Adjustment of the Gifted of the School of Education, New York University, as described by Zorbaugh and Boardman,[60] mentions a number of specific maladjustments of gifted children

> —enuresis, masturbation, stuttering, hysteria, compulsions, mild obsession, seclusiveness, excessive day dreaming and phantasy, temper tantrums, quarreling, fighting, defiance, running away from home, truancy, lying, stealing, obscene talk and writing obscene notes, sex delinquency, and the like. In all of these children, however, the behavior which led to the child's referral was clearly symptomatic of an underlying emotional disturbance.

It seems rather well established that pupils of superior intelligence are more likely to have well adjusted personalities than their less intelligent brothers. Superior children do, however, quite

57 Dosing, Minerva F., op. cit. p. 144
58 Conklin, Agnes, op. cit. p. 6
59 Payne, Arthur F. and Perry, James D. "The Intelligence Ranking of 250 City College Honor Students," School and Society 42: 363-364, September, 1935.
60 Zorbaugh, Harvey W. and Boardman, Rhea M. "Salvaging our Gifted Children". Journal of Educational Sociology, 10: 100-106, October, 1936.

frequently develop personality maladjustments which are like those of any other type of pupil.

We shall next take up the relation of personality to achievement.

Stagner[61] in his review of 45 investigations, reported almost uniformly low, zero, or slightly negative correlations between favorable personality qualities and school achievement. Pintner[62] in his survey of investigations found the same thing. There is little agreement among the investigators reported by Conklin[63] as to the relationship between personality and the achievement of superior pupils.

Rothney[64] finds little relationship existing between most personality traits and academic college scholarship according to several studies reported.

Stroud,[65] in summarizing several studies on personality, compared superior pupils (I.Q. 120-148) to inferior pupils (I.Q. 50-79) in social adjustment. "Infantilism and regressive emotional and social behavior were more frequent among the superior; disturbing behavior at home, maladjustment at school and intersibling conflicts, among the inferior."

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61 Stagner, Ross. "The Relation of Personality to Academic Aptitude and Achievement". Journal of Educational Research, 26: 648-660 May, 1933

62 Pintner, Rudolph. "Intelligence Tests". Psychological Bulletin, 23: 453-472, July, 1935.

63 Conklin, Agnes. op cit. p. 3-6.

64 Rothney, J.M. and Roens, B.A., "Applications of Personality and Character Measurement". Review of Educational Research, 11:4 February, 1941.

65 Stroud, J. B. "Psychological Tests and their Uses". Review of Educational Research, 11:29, February 1941.

Investigators including Lehman,[66] Steere,[67] Finch and Remzek,[68] Francis and Filmore,[69] Turney,[70] Poffenberger and Carpenter,[71] Paynter and Blanchard[72] and Stagner[73] found that correlations between achievement and various personality traits range from 0 to .54. Besing[74] reported that the majority of these investigators found positive relationships of varying degree between achievement and such traits as ambition, stability, initiative, persistence, trustworthiness, sense of accuracy, perseverance, industry, leadership, care for detail, motor inhibition.

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66 Lehman, A. L., "Factors other than Intelligence Pertaining to School Success." The New Deal in Education, 21st Annual Schoolmen's Week Proceedings, University of Pennsylvania Bulletin, 28: 304-307, 1934.

67 Steere, E. J., "The Effect of Character Traits on Scholastic Achievement." School and Society, 29: 707-708. June 1, 1929.

68 Finch, F. H. and Remzek, C.L., "The Relationship of the Bernreuter Personality Inventory to Scholastic Achievement and Intelligence." School and Society, 36: 594-596. November 5, 1932.

69 Francis, Kenneth V. and Filmore, Eva A. The Influence of Environment upon the Personality of Children. University of Iowa Studies in Child Welfare, vol. 8, no. 2. May 1, 1934, p. 44.

70 Turney, Austin Henry. "Intelligence, Motivation, and Achievement." Journal of Educational Psychology, 22: 426-434. September, 1931.

71 Poffenberger, A. T. and Carpenter, Florence L. "Character Traits in School Success." Journal of Experimental Psychology. 7: 67-74 February, 1924.

72 Paynter, Richard Henry and Blanchard, Phyllis, Educational Achievement of Problem Children. New York: Commonwealth Fund. 1929. p. 41.

73 Stagner, Ross. "The Relation of Personality to Academic Aptitude and Achievement." Journal of Educational Research, 26: 648-660. May, 1933.

74 Besing, Minerva F. op. cit. p. 16.

Desing[75] noted in her own study that although her problem cases ranked lowest in intelligence, they ranked between the upper and lower deciles in achievement.

Opinion is apparently divided on the relation between personality and achievement. The concensus of opinion appears to be that if any relationship exists it must be rather small.

We shall next consider a special aspect of the relation between personality and achievement - i.e., the relation of personality to the disparity between ability and achievement. As Starrak[76] says,

> the failure to work consistently up to one's capacity is demoralizing to character or personality, besides being a great source of waste of human energy.

The Iowa State College has developed a comprehensive program for eliminating this enormous waste of energy caused by poor achievement of superior pupils. An important part of the program concerns personality defects.

> If personality defects are found to be one of the chief causes of a student's working below ability, as is generally believed, we should encourage the development of a systematic program in personal development.[77]

This would involve several activities in addition to instruction in personality improvement. Better study conditions are provided, the number of semester hours of work is reduced, participation

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75 Desing, Minerva F., op. cit. p. 144

76 Starrak, J. A. "Matching Ability with Achievement". Journal of Higher Education, 8: 315-320, p. 315, June, 1937.

77 Ibid. p. 315

in extra-curricular activities is restricted, time spent on out of college work is reduced, and cooperation of parents is enlisted as parts of the program to stimulate students working below their apparent abilities.

> Enough differences have been discovered, however, to warrant the generalization that a more accurate understanding of the individual student will be attained when the pattern of his performance is considered as well as the general level at which he achieves.[78]

According to Wrenn, 79 if we should "step up" the minimum level (of achievement) for this group (of above average intelligence) to a point where it was at least somewhere near their potential level of achievement, we should find a large proportion of them sadly maladjusted, scholastically and from the point of view of an integrated personality.

Personality defects in general and certain defects in particular have been blamed for causing the disparity between ability and achievement. Traxler[80] writes in the February 1941 Review of Educational Research:

> "It is recognized that many instances of disparity between ability and achievement are explained by variation in a complex of personality factors covered by the term persistence."

Ryans[81] adds to the confusion when he reports low correlations between persistence measures and Bernreutter Personality Test scores. This must not be taken to mean that there is little relation between personality and

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78 Eckert, Ruth E. and Mills, Henry C. "Patterns of High School Performance," Studies in Articulation of High School and College, Series II, Bulletin #4, University of Buffalo Studies, Vol. 13, 1936. p. 180.

79 Wrenn, Charles Gilbert. "Aiding the Fit." Journal of Higher Education, 6: 357-363, October, 1935.

80 Traxler, A. E. "Current Construction and Evaluation of Personality and Character Tests". Review of Educational Research, 11:11. Feb. 1941.

81 Ryans, D. G. "A Tentative Statement of the Relation of Persistence Test Scores to Certain Personality Traits as Measured by the Bernreutter Inventory." Pedagogical Seminary and Journal of General Psychology, 54: 229-34. March, 1939.

persistence. The fact that persistence is a factor not well measured by personality tests may account for a great part of the discrepancy between ability and achievement.

Stagner[82] may have the answer when he states that:

> "High emotionality and high self-sufficiency lead to lower achievement than would be predicted from intelligence scores."

As yet there appears to be considerable disagreement about the relation between personality and the lower than expected achievement of superior pupils.

Sibling Relationships

Little conclusive evidence has been found concerning the relation of the birth rank of siblings to the discrepancy between promise and performance for pupils of superior intelligence.

As reported by Jones,[83] Huntington reviewing data on cases of outstanding achievement reported by Cattell and Havelock Ellis, concluded that the advantage of the first-born lies primarily in better health. Jones mentions that birth rank differences in intelligence are not easily demonstrated. Conklin's[84] findings were not in agreement with Huntington on this point. Neither her successful students nor her failing superior pupils show any predominance of favorable position for the child among his siblings.

Undesirable relations between a pupil and his siblings or his parents appear not to differentiate between successful and failing superior pupils.

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82 Stagner, Ross. op. cit. p. 668.
83 Jones, Harold E. op. cit. pp. 100-101.
84 Conklin, Agnes. op. cit. pp. 118-120.

Conklin,[85] in her study of sibling relationships between two groups of failing and successful high school students of superior intelligence, found that undesirable relations between a pupil and his siblings, such as competition, quarreling, and domination, are not especially characteristic of either group. Conklin also found that the disturbing relationships between parents and the siblings of a child were found to occur to an equal extent in both groups. Between a third and a fourth of the children studied by Desing[86] were said to get along better with playmates than with their siblings.

Size of Family

The achievement of pupils coming from small families approaches more closely the level their intelligence leads us to expect of them than does the achievement of pupils coming from large families. To state it another way, the smaller the pupil's family, the more likely his achievement will reach or exceed the promise of his intelligence.

J. B. Stroud,[87] summarizing five recent studies, says that test intelligence is negatively correlated with birth rate. This may be considered as indirect evidence that birth rate or size of family is negatively related to achievement. i.e. the smaller the family the better the achievement.

Griffiths[88] and Bursch,[89] as reported by Desing,[90] find a definite superiority in achievement for members of small families as

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85 Ibid. p. 120.
86 Desing, Minerva F. op. cit. p. 121
87 Stroud, J. B. "Psychological Tests and their Uses." Review of Educational Research, 11:20 February, 1941.
88 Griffiths, Charles H. "The Influence of Family on School Marks." School and Society, 24: 713-718. December 4, 1926.
89 Bursch, James F. op. cit. p. 520.
90 Desing, Minerva F. op. cit. p. 20,21.

compared with members of large families. Desing[91] discovered that there was a positive relationship between the size of family and maladjustment in the school.

Socio-Economic Status

Few positive results have been found regarding the relationship of socio-economic status and achievement of superior pupils. Several investigations listed below are in essential agreement on this point.

Eight studies reported on by Desing[92] show inconclusive results regarding the relationship between socio-economic status and achievement of intelligent pupils. Correlations range from .02 to .40. Socio-economic status seems to assume greater importance as a factor affecting achievement where maladjusted children are concerned.

There is little difference between the home setting of successful and unsuccessful high school students of superior intelligence, according to Conklin.[93]

Eckert and Mills[94] find little difference between the data on home background for successful and unsuccessful high school seniors of superior intelligence. Desing,[95] in her study of 1150 elementary pupils of average intelligence, concluded that "a tendency was noted for housing adequacy to be negatively related to achievement gain." She noted that children of families receiving some form of financial aid gained less in arithmetic and English, although her study indicated

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91 Desing, Minerva F. op. cit. p. 144.
92 Desing, Minerva F. op. cit. p. 18,19.
93 Conklin, Agnes, op. cit. p. 114.
94 Eckert, Ruth E. and Mills, Henry C. op. cit. pp. 274-282.
95 Desing, Minerva F. op. cit. p. 107.

that there was no relation between family income and achievement gain. Boys pupils whose fathers were engaged in manufacturing and mechanical industries averaged higher in achievement gain than other occupational groups. Her study also led to the conclusion that pupils from homes in which 3 or more magazines were taken showed increased achievement gain, although the number of books or newspapers available apparently showed no such relation.

Williams[96] emphasizes a point previously referred to by Bealer. He agrees that socio-economic status has more effect upon achievement where maladjustment is also present. Williams states that "studies continue to emphasize the relationship of home and community conditions to social maladjustment in children, and these are often of immediate concern to the school."

Investigators are in general agreement that where superior pupils are involved, the relation between socio-economic status and achievement is positive but low.

Study Habits

Most investigators agree that there is a positive relation between study habits and the achievement of superior pupils. There is a division of opinion on the degree of this relationship. Some investigators believe the association to be very close but others find that the positive association between study habits and achievement is small.

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96 Williams, J. Harold. "The Socially Maladjusted." Review of Educational Research, 1:250, June, 1941.

Eckert and Mills[97] report that the differences in studiousness between successful and unsuccessful high school seniors of superior intelligence are rather great, and all that intelligence apparently plays but a minor role in the dynamics of study.

Wrenn[98] concluded that students with high Thorndike (intelligence) scores but in the lower 20 per cent for scholarship showed the following characteristics to a significantly greater degree than did the high scholarship group:

1. They miss important points in a lecture while copying down notes on previous material.
2. They read so slowly they cannot get over all assigned material.
3. They are less careful in noting main and paragraph headings and summaries.
4. They do less overlearning beyond the point of immediate recall.
5. They are less apt to get each point as they go over it, but tend to come back.
6. They are inclined to take some time to get settled and warmed up, to wait for 'the mood to strike them', and to find it hard to work under pressure.

According to Conklin,[99] in her study:

> The one psychological finding is that the experimental (superior failing) group compares unfavorably with the control (superior successful) with respect to the studiousness index. . . It is more in the nature of a finding to discover that the girls of the experimental group, not the boys, lack interest in those desires and activities known to characterize studious people.

Three investigators, as reported by Desing,[100] came to the conclusion that older pupils spent more time in study than younger. Girls spent more time than boys, the average for high school pupils

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97 Eckert, Ruth E. and Mills, Henry C. "Variations Among High School Seniors in Promise and Performance Measures." School Review, 44: 240-41, April, 1936.

98 Wrenn, C. Gilbert. "Aiding the Fit", Journal of Higher Education 6: 359-60. October 1935.

99 Conklin, Agnes. op. cit. p. 12

100 Desing, Minerva F. op. cit. p. 21

being about 30 minutes per day. Bright students spent less time and made better marks at the college level, but this latter finding was non conclusive.

In her own study, Hsing[101] complains that there was a positive relationship between time spent in home study and achievement gain in arithmetic and English. In studying problem cases, she found that as a group they disliked school, objected more to homework, and participated to a lesser degree in the private study of some subject than do non-problem children.

On the other hand, some investigators found only a small degree of relationship between study habits and the achievement of superior pupils. By way of illustration Bacon[102] as reported by Newland, "compared the study habits of excellent and deficient high-school pupils and found that the superiority of the better group was not as marked as expected."

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101 Ibid. p. 107

102 Bacon, Francis L. "The Study Habits of Excellent and Deficient Pupils." Bulletin of the Department of Secondary School Principals 40: 107-10; March 1931. Reported by T. Ernest Newland in the Series of Educational Research, Chap. III "The Mentally Gifted," I: 230. June 1941.

School Provisions for Superior Pupils

Since 1927 considerable work has been done in providing a program for students of superior intelligence in the high schools of the United States. The program is only now gathering any considerable momentum, and methods and techniques are still in the experimental stage in most areas of this country. A sample of some of the work being done is outlined below.

Beginnings are being made in preparing a school program for superior pupils in the United States, but as yet it is apparently not widespread. Cohen[103] has written of the plans made in New York City to provide especially for the needs of gifted pupils. She refers to plans for segregation, variables in the curriculum, habits of industry, their writing and reading, backgrounds, techniques adapted to their instruction, and larger administrative units in which they study. Leta Hollingworth[104] describes the aims and activities of two "Terman classes" organized under the joint sponsorship of Teachers' College of Columbia University and the New York Board of Education. She discusses curricular adaptations, enrichment units, and special activities.

Similar studies have been begun in Baltimore,[105] Cleveland,[106]

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103 Cohen, Helen Louise, "The Program for Gifted Pupils in New York City." English Journal, 26: 548-56. September, 1937

104 Hollingworth, Leta S., "An enrichment curriculum for rapid learners at Public School 500: Speyer School." Teachers College Record, 39: 296-303. January, 1938.

105 "The Baltimore Program of Education for Pupils of Superior Ability". Baltimore Bulletin of Education, Vol. 15, #1. pp. 1-11. Sept., October, 1937.

106 Dunsheur, Prudence T., "What Cleveland is doing for Superior Pupils". English Journal, 26: 723-728. November, 1937

Philadelphia,[107] Columbus, Ohio,[108] Buffalo,[109] Rochester, Berkeley, Appleton, Wisc.,[110] Washington,[111] Kansas City,[112] Los Angeles[113] and other cities in the United States. This is a sample of the material available on this subject.

The National Education Association Research Bulletin for September 1941,[114] outlines a number of current school provisions for superior school pupils. It summarizes what is being done throughout the United States. The consensus of opinion seems to be that superior students should have: (1) specially enriched programs of class work; (2) a certain amount of rapid advancement or acceleration (not allowing the pupil to be placed with a group which is more than two years his superior in chronological age); (3) more freedom in selection of electives; (4) special provisions for special abilities; (5) separate classes under favorable conditions; (6) superior teachers; and (7) participation in extra curricular activities.

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107 Bolzau, Emma L. "Methods Used with a High Ability Group" Social Studies, 29: 255-258, October, 1938.

108 Coy, Genevieve. The Interests, Abilities, and Achievement of a Special Class for Gifted Children. New York Teachers College, Columbia University, 1923. 194 pp.

109 Jones, Edward S. A Charter for the Superior Student. Buffalo, New York, University of Buffalo, 1930. 67 pp. (University of Buffalo Studies, Vol. 10 #3, January, 1936.)

110 Osburn, W. J. and Rohan, B. J. Enriching the Curriculum for Gifted Children. New York, The Macmillan Company, 1931. 402 pp.

111 Mahn, Julia L. "The Hobby Clubs for Children with Special Gifts". Educational Method, 18: 21-26, October, 1938.

112 Witty, Paul A. A Study of One Hundred Gifted Children. Lawrence, Kansas. Bureau of School Service and Research, University of Kansas, 1930. 44 pp.

113 Stedman, Lulu M. Education of Gifted Children. Yonkers-on-Hudson, New York. World Book Company, 1924. 109 pp.

114 Anonymous, "High School Methods for Superior Students". National Education Association Research Bulletin; 19: 170-183, September, 1941.

Ever increasing attention is being given to the little-explored problems of the superior pupil and the development of his abilities and talents.

Summary

In many respects the literature of pupil achievement is often not in agreement. Certain hypothesis, however, are fairly well accepted and supported. It is generally agreed that intelligence and achievement are positively related, and that the mean correlation is about .50.

Recent evidence indicates that the children of foreign born parents achieve more in relation to their intelligence than children of native born parents.

Evidence indicates that unhappy family relationships have a detrimental effect on school achievement.

When general health is considered, there seems to be considerable evidence that the relationship between health and school success is slight but positive and that certain types of physical defects are more retarding than others.

Good study habits seem to be closely related with sustained effort and superior achievement among superior pupils.

The whole effect of personality on achievement or achievement ratio is in question.

Socio-economic status appears not to be important except where cases of failure and other maladjustment are concerned. The general opinion, however, favors a small positive relationship between socio-economic status and achievement.

There is considerable disagreement among investigators regarding achievement and parents' education, certain health factors, home discipline, position in family or age of siblings, and certain personality traits.

The Relation of this Study to Previous Studies

As Desing[115] asserts:

> In general, it may be said that studies of achievement have been too restricted in area. The influences which may conceivably condition achievement are so numerous that studies involving only three or four, as most do, are likely to prove inadequate for the interpretation of their own findings . . . Any study of pupil growth must contend with a variety of known and unknown factors, which may exert an influence so great as to nullify the results of the research.

In spite of, or perhaps because of considerable research on the relation of various elements to school success, there exists little agreement and considerable uncertainty as to what elements in the home, school, and community have a direct influence upon school progress. By selecting only pupils of high I. Q., the author has attempted to rule out the effects of low intelligence upon achievement. The majority of past studies on the secondary level have dealt with only a few variables. There is need for more extensive studies of achievement, particularly for pupils of superior intelligence, which will be comprehensive enough to include a larger number of elements. The present study is intended to be one of this type, comprehensive, covering variables in two fields - personality and home backgrounds which may be related to the achievement of superior secondary pupils.

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115 Desing, Minerva F., op. cit. pp. 23-24.

It would be desirable to search out and find the relation of every possible variable to the discrepancy between promise and performance in pupils of superior intelligence. Because this task is beyond the limits of the writer's abilities in the time available, the study has been limited to two fields of related variables.

This study differs from other studies investigating the factors associated with the varied achievement of superior pupils in several ways.

Two relatively new and improved measures of personality have been selected to measure certain aspects of personality. By the use of the Washborne S-A Inventory and the Link Inventory of Activities and Interests with the same selected group of pupils of superior intelligence, the writer hopes to establish the existence of new associations between the achievement ratio and personality traits which might not otherwise have been brought out.

A number of infrequently studied variables believed to be associated with the discrepancy between promise and performance for pupils of superior intelligence have been included in this study of the relation of achievement with home backgrounds. Among these are home discipline, rural versus urban environment, and certain aspects of family and sibling relationships.

Considerable work has been done investigating the association between achievement and Sims socio-economic status, study habits, antecedents' country of birth, foreign languages spoken in the home, parents' and pupil's health and physical defects, and parents' education.

For these variables, this study adds a new viewpoint in investigating these relationships by using the achievement ratio.

An infrequently used method of holding intelligence constant has been employed -- the achievement ratio. This measure of the degree a pupil's school performance is approaching his promise has several advantages. By using the A. R. it is possible to include many cases which might have to be dropped if pairing or matching or some other system of equating for intelligence is used.

By giving a measure of how well performance approaches promise for each pupil, the A. R. allows greater opportunity for dividing a variable to be studied into sub-categories; and by making it possible to obtain an A. R. for each category, the A. R.'s for the categories may be compared. In addition, the achievement ratio lends itself nicely to statistical calculation.

Care has been taken to make this sample of pupils of superior intelligence as representative of metropolitan high school pupils as possible. The pupils have been drawn from all four senior high school grades of five high schools in different sections of Baltimore, Maryland. These pupils have been selected so as to closely approach a cross section of white metropolitan high school population of Baltimore. Baltimore is itself a representative city of a representative state in the United States.[116]

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116 Bell, Howard M., Youth Tell Their Story. A study conducted for the American Youth Commission, American Council on Education, Washington, D.C., 1938. 270 pp.

It is hoped that as a result of these changes in approach to the problem, new data will be uncovered that will make a contribution to the field of research on superior pupils.

CHAPTER II

SELECTION OF CASES AND COLLECTION OF DATA ON THE CASES STUDIED

A. Selection of the Cases for Study

School Population from which Cases Were Selected

Criterion of Superior Intelligence

B. Collection of Data on the Cases Studied

Measures of Intelligence

Measures of Achievement

Measures of Personality

Measure of Study Habits

Measure of Socio-Economic Status

Health and Physical Defects

Questionaire

School Records

CHAPTER II

SELECTION OF CASES AND COLLECTION OF DATA ON THE CASES STUDIED

A. Selection of Cases for the Study.

School Population from Which the Cases Were Selected.

The cases included in this study were selected from 5 white public secondary schools in Baltimore City. The combined enrollment of these schools totaled approximately 11,000 pupils. The pupils were selected from Baltimore City College #408, Eastern High School #404, Florence Nightingale Junior High School #46, Forest Park High School #406, and Southern Junior-Senior High School #70. These schools have been selected to represent the white public high schools of Baltimore. Baltimore City College is an all boys' senior high school in the northeast section of Baltimore, drawing pupils from all parts of the city. Eastern High School is an all girls' senior high school in the northeast quarter of the city, drawing pupils from all parts of Baltimore. Forest Park High School is a coeducational senior high school in the northwest quarter of Baltimore, drawing pupils chiefly from that section. Florence Nightingale Junior High School is a coeducational junior high school in the central section of the city, drawing pupils chiefly from that section. Southern High School is a coeducational junior-senior high school in the south central section of Baltimore drawing pupils chiefly from south Baltimore. Only pupils in grades 9 thru 12 from these five schools were included in this study. The pupils from Southern High School come from a predominantly industrial section of the city; pupils from the Florence Nightingale High School come from a predominantly

commercial section of the city; pupils from Eastern High School and the Baltimore City College come from all sections of the city, including all classes of occupations. Students from Forest Park High School come from a predominantly residential section of the city and tend to balance those pupils from Southern High School. The object of this particular method of selecting the cases for study was to obtain a sample population representative of the white pupils of superior intelligence from the secondary schools (grades 9-12) of Baltimore, Maryland.

Pupils were selected from the various schools on a voluntary basis with their parents' consent. It must be noted here that 80 per cent of those invited accepted the invitation and completed the data required for the investigation. The table below shows the distribution of pupils by schools.

TABLE 1 SHOWING INTELLIGENCE OF PUPILS BY SCHOOLS

School No.	I.Q. 110-119		I.Q. 120-129		I.Q. 130 and over		Total	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
(1)	4	6	8	17	5		17	23
(2)	8	19	8	10	4		20	29
(3)				64		6		70
(4)			19	32	3		22	32
(5)			76		8		84	
TOTALS	12	25	111	123	20	6	143	154

GRAND TOTAL 297

Table 2 shows how the pupils are distributed by grade, sex, and level of intelligence.

TABLE 2. DISTRIBUTION OF PUPILS BY GRADE, SEX AND LEVEL OF INTELLIGENCE

Grade	I.Q. 110-119		I.Q. 120-129		I. Q. 130 and over		Total	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
9B	4	6	8	10	3	-	15	16
9A	7	17	5	17	4	-	16	34
10B	-	2	27	22	1	2	28	26
10A	1	-	58	38	3	1	62	39
11B	-	-	1	9	-	1	1	10
11A	-	-	16	26	2	2	18	28
12B	-	-	1	1	2	-	3	1
12A	-	-	-	-	-	-	-	-
TOTALS	12	25	111	123	20	6	143	154

Criterion of Intelligence for Selection of Cases

A preliminary examination of school records and intelligence quotients of pupils in the above mentioned secondary schools was made before any were invited to participate in the study. Only those pupils from grades 9 to 12 whose Otis intelligence quotients as recorded by the school were 120 or above were included in the preliminary invitation. These pupils were given the Otis Self-Administering Test of Mental Ability, higher examination: Form A and the Henmon Nelson Test of Mental Ability: Form A, for Grades 7 to 12. Those pupils who scored 120 or above on both the Otis and the Henmon Nelson Intelligence Tests were retained in the study. A small group of 37 students were retained in the study whose intelligence quotients on the Otis Test fell between 110 and 119, with intelligence quotients on the Henmon Nelson Test of 110 or above. This last group of pupils were those whose Otis intelligence quotients had dropped from 1 to 10 points over a period of no more than 2 years. It was decided to retain this group for basis of comparison with those pupils whose I. Q.'s were consistently above 120. Perhaps unreliability of the tests used would account for a considerable part of this I. Q. drop.

B. Collection of Data on the Cases Studied.

Measures of Intelligence

As has already been mentioned, two group tests were used as measures of intelligence, the Otis and Herrmon Nelson. Those pupils whose I. Q. scores were 120 or above on both tests were retained in the study. In addition, 37 other cases were retained whose I. Q.'s on the Otis ranged between 110 and 119, and whose Herrmon Nelson I. Q. was at least 110. It was assumed, for the purpose of this study, that pupils who obtained an intelligence quotient of at least 120 on both the Otis and Herrmon Nelson Intelligence Tests would be considered as pupils of superior intelligence.

All the tests, inventories, and questionaires administered to any one particular pupil were given within a 10 day period. All five schools were visited one after the other during the months of February, March and April, 1931.

Measures of Achievement

The Myers-Ruch High School Progress Test Form AM for Senior High Schools[117] and the Sones-Harry High School Achievement Test Form A for Secondary Schools and College Entrance[118] were the general tests used as measures of achievement. These tests were used interchangeably. For purposes of comparison, standard scores were found for each test.

Myers-Ruch Achievement Test covers the fields of English, Social Studies, Mathematics, and Science. The Sones-Harry Achievement

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117 Myers, Charles E., Ruch, Giles M. and Loofbourow, Graham C. Myers-Ruch High School Progress Test: Form AM. World Book Company, Yonkers-on-Hudson, New York, 1930.

118 Sones, W. D. and Harry, David P. Sones-Harry High School Achievement Test: Form A. World Book Company, Yonkers-on-Hudson, New York, 1929.

Test covers the same fields under the headings of Language and Literature, Mathematics, Social Studies, and Natural Sciences.

The Myers-Ruch High School Progress Test was devised with a definite purpose in mind. According to its authors,[119] the Myers-Ruch High School Progress Test is an achievement test intended primarily to yield a measure of mastery of the basic content of the average high school course of study. The score for any single subject-matter section is not intended to be considered as a reliable measure of mastery of that subject for any one pupil. The total score on the test, however, is a reliable index of general achievement for individual guidance. The percentile norms apply to each grade for which the test is intended and are based on approximately 9,000 cases from numerous communities in the New England states, Virginia and California.

The Myers-Ruch test was particularly desirable because it may be used in conjunction with the Otis Quick-Scoring Mental Ability Tests to find the achievement ratio for each pupil - from tables already constructed by the test authors. The Myers-Ruch test and the Otis Gamma test were administered jointly to nearly 3,000 unselected high school pupils taken largely from 11th grade pupils in the cities of North Carolina. From these data, the Myers-Ruch High School Progress Test scores and the Otis Gamma scores were converted into standard scores. These scores, of course, can be compared directly, and the differences between them at various points on the scale are comparable. The form used for computing standard scores was: Standard score = 50 + $\frac{x}{\sigma}$, where x is the difference between the individual score and the mean score of the

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119 Myers, Charles E., Ruch, Giles M. and Loofbourow, Grahas C., Myers-Ruch High School Progress Test: Manual of Directions, p. 1, 6, 7. World Book Company, Yonkers-on-Hudson, New York, 1938.

group and is the standard deviation of the scores. The use of this formula converts the distribution of scores on both the Myers-Lust and the Otis Gamma tests into distributions having a mean of 50 and a standard deviation of 10. Scores on the Otis Alpha Test are easily converted to Otis Gamma scores and thence to standard scores. From the achievement standard scores and the intelligence standard score an achievement ratio was calculated for each pupil.

The Sones-Harry High School Achievement Test is based on the principle that the student, as he advances through the secondary school, should be continually adding to his fund of functional information. According to the Manual of Directions,[120]

> The main attempt has been to sample as many parts of the four main fields of the secondary school core curricula as is consistent with secondary school testing conditions and reliable measurement.

The sections and the items of each section have been arranged in order of increasing difficulty. The data on the total test are based upon addition of scores from the four parts without any weighting of the separate parts.

According to the Manual of Directions,[121] Heidinger in his study of the value of the Sones-Harry Test for predicting success in the University of Chicago stated that--

> The findings indicate that the Sones-Harry tests in their respective fields have a generally higher predictive value than high school averages or intelligence scores for the estimation of college work. It is rather remarkable that a forty-minute test can give more reliable information about

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120 Sones, W.W. and Harry, David P. Sones-Harry High School Achievement Tests: Manual of Directions, World Book Company, Yonkers-on-Hudson, New York, 1930. p. 3

121 Ibid. p. 3.

> the sort of work a student is likely to do in his freshman course than is given by his high school average . . . . . On the basis of these findings it is recommended that the university continue to give tests such as the Sones-Harry type, and discontinue the psychological examination, if some curtailment is necessary in the testing program.

The standard error of estimate is about 12 points based on the 415 items of the test. The percentile norms are given for this test as they are for the Myers-Ruch test and serve as an excellent method of comparison for the two tests.

School marks were also used as a measure of achievement. General scholarship average for the September-February, 1940-1941 semester was used as a measure of achievement. The number of subject failures during this term were also used in comparing the groups considered in the study. In addition, the failures in semesters and semesters skipped throughout the secondary school period were considered as a measure of achievement in comparing the various groups.

Measure of Personality

The two measures of personality used in this study were the Washburne S-A Inventory (Thaspic Edition)[122] and the Inventory of Activities and Interests by H. C. Link and others.[123]

Washburne Social Adjustment Inventory. According to the Manual of Directions,[124] "The primary purpose of the Washburne Social-Adjustment Inventory is to determine the degree of social and emotional adjustment of an individual." Six traits are scored separately which have correlated very slightly with intelligence and very highly with

122 Washburne, John N. Washburne S-A Inventory. World Book Company, Yonkers-on-Hudson, New York, 1940.

123 Link, H.C. and others. Inventory of Acitvities and Interests (for boys and young men) (for girls and young women). The Psychological Corporation, New York, 1938.

124 Washburne, John N. Washburne Social-Adjustment Inventory (Thaspic Edition), Manual for Interpreting. World Book Co. Yonkers-on-Hudson, New York, 1940.

social and emotional adjustment. These six separate scores may be combined to give a total adjustment score. Three of the traits pertain primarily to emotional adjustment to other people and to the environment. The remaining three pertain to self-organization and regulation. The classifications of the subtests are Truthfulness, Happiness, Alienation, Sympathy, Purpose, Impulse-Judgment, Control, and Wishes. This inventory was set up to elicit responses with differences in adjustment but not with differences in intelligence.

No question in this inventory was retained unless there was a reliable difference between the number of maladjusted and the number of well-adjusted individuals who answered it correctly. Washburne's[125] definition of adjustment was:

> The cooperative, happy person who seemed to be dealing effectively with his environment was counted well-adjusted; the uncooperative, discontented, disorderly, estranged person or one who seemed to be unable either to alter his environment or to adapt himself to it was counted maladjusted.

Before the test reached its present form, between 30 and 40 populations were tested including well over 10,000 individuals. As a further check on validity, it was found that the bi-serial r coefficient of validity is .90, and the correlation between total scores on the inventory and intelligence is negligible -- .07.

Perhaps one of the major advantages of this test is its screening test of truthfulness. This test for truthfulness, composed of questions developed by Hartshorn and May, is designed to reveal carelessness or misrepresentation in replies. Sprinkled throughout the

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125 Ibid. p. 11.

inventory, these questions are of such a nature that the apparently desirable answers indicate inaccuracy or lying. This subtest on truthfulness overcomes one of the major objections to the questionnaire type of personality test. Where a relatively high degree of untruthfulness is indicated by the score on this subtest, it is advisable to discount the answers or discard the paper.

Washburne states in the Manual of Directions[126] that the coefficient of reliability as obtained from a retest of 400 college students after an interval of one semester is .92. The probable error of an individual's total social-adjustment score is 5, and the coefficients of reliability for the various subtests range from .80 to .90. These results all seem to indicate that the inventory is sufficiently reliable enough for individual diagnosis.

Link's Inventory of Activities and Interests. Link's[127] definition of personality as recorded in the Manual of Directions[128] is "personality is measured by the extent to which the individual has learned to convert his energies into habits and skills which interest and serve other people". Link has called this test the Inventory of Activities and Interests because he and his assistants felt it would be inadvisable to display to those taking the tests such a title as Personality Inventory or Personality Quotient Tests. This test, differing from the Washburne S-A Inventory, includes over 150 questions regarding habits and activities rather than feelings or emotions. The answers to the test are given by checking one of two or three alternatives.

126 Ibid. p. 12

127 Link, H. C. "A Test of Four Personality Traits of Adolescents". Journal of Applied Psychology, [illegible]

128 Link, H. C. and others. Manual for the P.Q. or Personality Quotient Test (Inventory of Activities and Interests) The Psychological Corporation, New York, 1938. p.1.

The purpose of the test, as given in the Manual of Directions,[129] is "to provide a measure of personality for normal students and to provide this measure in terms of a P.Q. or a personality quotient". Beside the total score from which the P.Q. is obtained, there are four subtests for the following traits or collections of habits: Social Initiative, Self-Determination, Economic Self-Determination, and Adjustment to the opposite Sex.

This inventory was designed and standardized for secondary school students. The validity of this test has been demonstrated in part by studies which cover 74 schools in various parts of the United States. The opinion of pupils and of teachers appeared to have a significant positive relationship to scores on the P. Q. test, according to the results of Thomson[130] and Drake.[131]

The coefficients of reliability of the boy's form, when administered to 421 boys in 1936, was found to range from .75 to .88 for the various subtests and total score. The Link theory of personality, according to the Manual of Directions,[132] assumes that it is the result of habits which can be developed and measured just as education now develops and measures scholastic habits. The P. Q. Test attempts to enumerate and evaluate the essential habits and skills which contribute to personality.

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129 Ibid. p.1

130 Thomson, W. A. "An Evaluation of the P.Q. (Personality Quotient) Test". Character and Personality, [illegible]

131 Drake, M. J., Roslow, S., and Bennett, G. K. "The Relationship of Self-Rating and Classmate Rating on Personality Traits". Journal of Experimental Education, [illegible]

132 Link, H. C. and others. Manual for the P. Q. or Personality Quotient Test. Psychological Corporation, New York, 1938. p. 1-6.

The distinctive feature of this personality test is that a personality quotient may be obtained from the total test scores. This personality quotient is intended to be for personality what the intelligence quotient is for intelligence. Norms for grades have been established for both boys and girls throughout the secondary school period. These norms for P. Q. 's, as given on p. 8 of the Manual of Directions, are based on 3131 tests given to students throughout the United States.

The P. Q. is found by using the formula:[133]

$$P.Q. = \frac{17}{\sigma}(X-M) + 100$$

where σ = the standard deviation of the distribution for the sex and grade group of the individual on Scale X and M the mean score for the sex and grade group of the individual on scale X, and X the individual's score on Scale X.

Measure of Study Habits

The measure of study habits used in this study is C. Gilbert Wrenn's Study-Habits Inventory.[134] This inventory is composed of a series of statements of situations, habits, and conditions which may affect the use of study time and consequent success in school work and study. The test is divided into 3 parts. The first part concerns note taking and reading techniques; the second and third sections concern habits of concentration and school interests, and general habits of work. The questions are answered by checking one of three differently weighted responses.

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133 Ibid. p. 7 .

134 Wrenn, C. Gilbert and McKeown, R. B. Study-Habits Inventory , Stanford University Press, Leland Stanford University, California. 1934 .

According to the Manual of Directions,[136] the inventory is an orientation device. Its functions are to identify good and bad study habits of students. It indicates which faulty habit is the most serious by weighting more heavily study habits which have been experimentally determined to be symptomatic of good scholarship. The total score indicates the general quality of the student's study habits. In general, a high positive score on the Wrenn Study-Habits Inventory indicates good study habits, while a high negative score indicates generally poor study habits.

Socio-Economic Status

The Sims Score Card for Socio-Economic Status, Form C[136] was used as the measure of socio-economic status. The Score Card, according to the Manual of Directions,[137] was developed by Verner M. Sims in order to provide a simple, convenient, and objective device for determining the cultural, social, and economic background furnished by the homes of school children. This is an excellent device for measuring one aspect of the environment of children. Perhaps one of the greatest values of the Score Card is that it is able to give each pupil a score and numerical rating from 1 to 10 which lends itself to statistical calculations. The Score Card may be used for pupils of grades 4 to 12 inclusive.

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136 Sims, V. M. Score Card for Socio-Economic Status. Form C Public School Publishing Company, Bloomington, Illinois. 1927.

137 Sims, V. M. Score Card for Socio-Economic Status, Manual of Directions Public School Publishing Company, Bloomington, Illinois, 1927.

Health and Physical Defects

Each of the pupils in this study was given a special thorough physical examination by the school physician. A record was kept of the general family health history, student's health history, and the general health examination. Particular care was taken by the school doctor in these examinations that no physical defect would be overlooked. Special attention was given to the search for defects in sight, hearing, speech, nose and throat, mouth including teeth, weight, any motor defects, heart, lungs. In other words, the examination given covered thoroughly all of those items listed on the physical examination report which the Division of Health and Physical Education of the Department of Education of the City of Baltimore requires for each pupil. It was arranged so that the school doctor made his examination within 5 days after the pupil had completed the series of tests, inventories and questionnaires.

Questionnaire.

A general questionnaire was filled out by each pupil. This questionnaire covered a variety of fields, and was something of a miscellaneous catch-all containing 70 questions. The questionnaire supplied information regarding parents' and grandparents' country of birth and whether any foreign languages were spoken in the home. Information was also supplied regarding general family and sibling relations for each pupil in the study. It included questions involving whether the pupil's family were separated or not, with whom the pupil was living, how well he got along with his parents, what type of punishment, if any, was administered, how many brothers and sisters he had, his

position in the family, and whether he got along with his siblings. Data on time-consuming activities such as recreational activities, church activities, after school paid employment activities, house work activities, and extra curricular activities was given in the questionnaire. Reading preferences, extent of travel, dreams, illnesses and defects, smoking and habits, and bank accounts were other items covered in the questionnaire. In addition, various items regarding school such as semesters failed, semesters skipped, attendance in summer school, times on the honor roll, intentions regarding additional schooling, preferences for men or women teachers, reasons for liking or disliking school, and marks in school conduct were included. A copy of this questionnaire will be found in the Appendix.

School Records

The scholarship record cards giving subject marks, conduct and effort marks as well as attendance records were referred to.

The Baltimore Packet System records were used, giving early physical data on entrance at first grade, first grade intelligence rating, various subject matter and intelligence test scores, any important information concerning the pupil's school difficulties or problems, cards showing pupil's aim in life, vocational choice, interests, scholarship record from first grade up to date, and any other matters of special interest to the principal or vocational counselor.

CHAPTER III

TREATMENT OF THE DATA

A. Compilation of a Master Chart Including All the Data Collected.

B. Calculation of the Achievement Ratio for Each Pupil.

C. Statistical Method Used in Comparing Achievement Ratio with Each Variable - Analysis of Variance.

D. Division into Achievement Ratio Groups.

CHAPTER III

TREATMENT OF THE DATA

A. Compilation of a Master Chart Including All Data

A master chart was compiled from the individual data cards, tests scores, and questionnaire results. Complete data on each pupil is given in the master chart covering all the variables studied. A portion of the master chart is shown in the Appendix.

B. Calculation of the Achievement Ratio.

We have a measure of achievement in the achievement test results and a measure of intelligence in the intelligence test results. This measure of intelligence is an index of the ability of a pupil to master the general tasks of life. It is also a measure of general progress or achievement which might be expected of a pupil in school. By combining the measures of intelligence and achievement an achievement ratio for each pupil was obtained. The achievement ratio is a measure of whether a pupil's school progress or achievement is up to that which is expected of a pupil having his intelligence. The achievement ratio may also be considered as a measure indicating whether a pupil's school progress is poorer than, equal to, or better than his general progress as indicated by an intelligence test.

It is possible, but infrequent, for a pupil to be progressing scholastically in school better than we would expect of one of his intelligence, particularly in the case of pupils of superior intelligence. It would seem to be quite possible for a pupil to progress in school better than we might expect from his non-school progress or a

measure of it. Quite frequently, of course, the reverse is true; a pupil's promise very often exceeds his performance.

The achievement ratio used here is then a measure of how well a pupil's performance in school as measured by an achievement test approaches (is less than, equal to, or better than) his promise as measured by an intelligence test. This achievement ratio was arrived at in this manner: the achievement test score was changed to a standard score. The intelligence test score was changed to a standard score, and then the intelligence standard score was subtracted from the achievement standard score.

Where the achievement ratio was positive, it was an indication that the pupil was achieving better than might be expected of a pupil having his I.Q. Where the achievement ratio was negative, it was assumed that the pupil was not achieving up to his promise, a very high negative result indicated that he was achieving considerably below his promise, a small negative result that a pupil was achieving slightly below his promise.

In Chapter II under Measures of Achievement the method Myers and Ruch have used in arriving at this measure of performance in reference to promise is mentioned.

When the achievement ratios collected by Myers and Ruch for all pupils are compared with those collected in this study for superior pupils it is immediately noticeable that the mean achievement ratio for these superior pupils is considerably below the zero achievement ratio used as the Myers and Ruch mean. The mean achievement ratio for these 297 pupils of superior intelligence was -7.[illegible];

significantly below the Myer-Ruch mean of 0. Perha
difference will be accounted for when a thorough st
achievement ratio to various variables is made.

Table 3 gives a distribution of ach
schools separated for boys and girls. In school N
boy having a high positive achievement ratio, betw
indicating that his performance is far exceeding h
the other hand, in the same shcool No. 4, there is
achievement ratio is low negative between [illegible] and [illegible]
performance is far below her promise.

TABLE 3. DISTRIBUTION OF ACHIEVEMENT RATIOS BY
FOR BOYS AND GIRLS

ACHIEVEMENT RATIOS	School 1		School 2		School 4		Sc
	Boys	Girls	Boys	Girls	Boys	Girls	Gi
10 to 19					1		
0 to 9	3	1	5	5	7	2	
-9 to 0	7	5	8	13	11	24	3
-19 to -10	6	12	7	10	3	5	2
-29 to -20	1	4		1			
-39 to -30		1				1	1
TOTALS	17	23	20	29	22	32	7

C. Method Used in Showing the Relationship of Achievement Ratio to Each Variable

After the achievement ratio had been calculated for each pupil by subtracting the standard score for intelligence from the standard score for achievement, the relationship between these achievement ratios and various variables were determined.

The writer was investigating the relationship of achievement ratio with personality test scores and home backgrounds. The Washburne and Link personality subtest and total scores served as one group of variables. Variables selected under home backgrounds include those covering parent-pupil relationships, the pupils' antecedents' birthplace, parent and pupil health, sibling relationships, home study conditions, and general home environment. Below is an alphabetic list of the variables:

Environment - Rural or Urban
Extra Study Help
Family Residence - Broken or Intact Family
Father's Country of Birth
Father's Education
Father's Father's Country of Birth
Father's Mother's Country of Birth
Foreign Languages Spoken in the Home
Home Discipline
Link Inventory E.S.D.Score
" " S.D. "
" " S.I. "
" " S.A. "
" " Personality Quotient
Mother's Country of Birth
Mother's Education
Mother's Father's Country of Birth
Mother's Mother's Country of Birth
Number of American born grandparents
Parent's Health
Parents working
Physical Disabilities
Pupil's Health

Siblings
Sibling Relationships
Sims Socio-Economic Status Group
Washbourne Truthfulness Score
" Happiness "
" Alienation "
" Sympathy "
" Purpose "
" Impulse-Judgment Score
" Control "
Wrenn Study Habits-Total Score

Each of the above variables had under it several subclassifications. These subclassifications were drawn up to be mutually exclusive.

A graph showing the relationship of achievement ratio with each variable and its categories or subclassifications was made. Separate graphs were made for boys and girls as well as for the total group.

The method used for calculating the relationship between the variables and achievement ratio was by analysis of variance.

By using the F test,[139] it was possible to determine whether a significant relationship existed between any one of the experimental variables and the achievement ratio. Unless otherwise noted a significant relationship means significant at the 1% level, that is, there are 99 chances out of a hundred that a relationship exists. Where the F test indicated that the relationship was significant at the five per cent level, that is, there are 95 chances out of a hundred that a relationship exists, the relationship was also considered significant, but whenever such relationships were referred to, this is noted. As Lindquist[140] says, it must be remembered when using the F test that the degree of

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139 Lindquist, E. F. Statistical Analysis in Educational Research, Houghton Mifflin Company, New York. 1940, p. 10.
140 Ibid. pp 15-16.

relationship is not given, and that while a relationship may be consistently present, it may at the same time be small.

B. Division Into Achievement Ratio Groups

The data were assigned to six achievement ratio groups as listed in Table No. 3.

As can readily be seen there were 143 boys and 154 girls, making a total of 297 cases in all six achievement groups. There were only 2 boys in the highest achievement ratio group 10 to 19; there were 49 cases in the 0 to 9 group; 149 cases in the -9 to 0 group; 83 cases in the -10 to -19 group; 11 cases in the -20 to -29 group and 3 girls in the lowest achievement ratio group of -30 to -39.

CHAPTER IV

DATA ON ACHIEVEMENT FOR THE SUPERIOR PUPILS STUDIED

A. Data on Achievement Test Scores

B. Data on Mental Ages

C. Data on Intelligence Quotients

D. Data on Achievement Ratios

E. Data on General Scholarship Averages

F. Data on Conduct and Effort Marks

G. Data on Semesters Failed

H. Data on Semesters Accelerated

I. Summary

CHAPTER IV

DATA ON ACHIEVEMENT FOR THE SUPERIOR PUPILS STUDIED

A. Data on Achievement Test Scores

As has already been mentioned, a standarized achievement test was given every pupil and the scores changed to standard scores. Table 4 shows a distribution of these scores.

TABLE 4 DISTRIBUTION OF MYER-RUCH ACHIEVEMENT STANDARD SCORES FOR 297 HIGH SCHOOL PUPILS OF SUPERIOR INTELLIGENCE SEPARATED BY BOYS AND GIRLS

Achievement Standard Scores	NUMBER OF PUPILS		
	BOYS	GIRLS	TOTAL
*72-79	10	3	13
68-71	10	11	21
64-67	20	19	39
60-63	26	23	49
56-59	31	23	54
52-55	28	18	46
48-51	8	22	30
44-47	5	16	21
40-43	1	5	6
*20-39	6	12	18
TOTAL	143	154	297
MEAN	59.2	55.9	57.5

In this distribution as in many subsequent distributions the step intervals at the extremes of the distribution are coarsened wherever the frequencies of the intervals become proportionally very small.

Examination of the distribution of achievement scores in Table 4 above indicates that the distribution for the total group closely approaches normal,* being a bit skewed to the left. The mean achievement standard score for the total group is 57.5. The modal interval is 56-59 and the mode is 57.6.

The distribution in Table 4 showing the achievement standard scores for the boys is skewed considerably to the right. The mean for this distribution is 59.2 while the mode is 57.4.

The distribution of girls achievement standard scores in Table 4 is bi-modal at the 60-63 and 56-59 intervals and was considerably skewed to the left. The mean for the distribution is 55.6 several points below that for the distributions of the boys or the total group.

It is quite evident that the boys excel the girls in mean achievement standard scores. The distribution of all achievement standard scores is left skewed because of the preponderance of low scores in the girl's distribution.

This superiority of boys over girls in achievement as measured by a standardized achievement test is seldom reported by other investigators.

Desing[141] reported on four studies comparing the achievement of boys and girls. In each study boys were found to be superior to girls in achievement as measured by achievement test scores. In the same section, however, Desing reported other studies favoring girls

141 Desing, Minerva F. op. cit. pp. 13,14.

* normal has been inadvertently used here and in the following pages where symetrical was the word intended to describe the appearance of the distribution or curve.

where achievement as measured by standardized tests is concerned. This is illustrative of the literature on the subject.

B. Data on Mental Ages

The mental age for each pupil was obtained from the Otis intelligence test score. Table 5 gives distributions of mental ages by months for the boys, girls and the total group.

TABLE 5 - DISTRIBUTION OF MENTAL AGES IN MONTHS SEPARATED FOR BOYS AND GIRLS

Mental Age (in months)	NUMBER OF PUPILS		
	Boys	Girls	Total Group
235-274	30	43	73
215-234	82	61	143
175-214	31	50	81
TOTALS	143	154	297
MEAN	224.9	223.3	224.1

The total distribution takes the form of a normal curve a bit skewed to the left. The mode for the total distribution is 224.4 and the mean is 224.1 (18 yrs. 6 mo.)

The distribution of mental ages of the boys approaches the normal rather closely with a mean of 222.9 and a mode of 224.8. This skewness to the right is negligible.

The distribution of mental ages of the girls is close to normal, a trifle skewed to the left. The mean mental age of the girls is 223.3 and the mode is 224.2.

The boys and girls included in this study differ little

in mean mental age but the slight difference that does exist favors the boys. This difference may in part account for the superiority of the boys over the girls in mean achievement test scores.

C. Data on Intelligence Quotients.

Tables 6 and 7 show the distributions of Otis I. Q's and Henmon-Nelson I. Q.'s.

TABLE 6 - DISTRIBUTION OF OTIS I.Q's SEPARATED FOR BOYS AND GIRLS

Otis I. Q.	NUMBER OF PUPILS		
	BOYS	GIRLS	TOTAL
130-37	20	6	26
128-29	15	13	28
126-27	15	16	31
124-25	29	27	56
122-23	31	32	63
120-21	21	35	56
118-19	5	12	17
110-117	7	13	20
TOTALS	143	154	297
MEAN	124.4	122.9	123.6

TABLE 7 - DISTRIBUTION OF HERMON-NELSON I.Q's SEPARATED FOR BOYS AND GIRLS

Hermon-Nelson I.Q.	NUMBER OF PUPILS BOYS	GIRLS	TOTAL
161-65	1	0	1
156-60	1	0	1
151-55	2	0	2
146-50	5	1	6
141-45	8	3	11
136-40	17	10	27
131-35	21	10	31
126-30	27	32	59
121-25	32	35	67
116-20	23	40	63
110-15	6	23	29
TOTALS	143	154	297
MEAN	129.3	124.	126.6

The distribution in Table 6 of Otis Intelligence Quotients for these superior pupils closely approaches a normal distribution. The mean Otis I.Q. for the total group is 123.6; the mode is at practically the same point 123.0. Apparently the total Otis I.Q. distribution is a bit skewed to the right. The distribution of girls Otis I.Q.'s is a bit more skewed to the right than is the total distribution. The mean Otis I.Q. for the girls is 122.9 while the mode falls in the 120-121 interval. The distribution of boys Otis I.Q.'s is skewed to the right with the mean at 124.4 and the mode at 123.2.

The total distribution in Table 7 of Pressey-Nelson intelligence quotients is skewed to the right. The mean I.Q. is 123.6 and the mode is 123.4. When the distribution of boys' I.Q.'s only is observed, it is noticed that the mean boys' Pressey-Nelson I.Q. is 123.3 and the mode is 123.7. Evidently the boy's distribution is considerably skewed to the right. For the girls distribution, there is a definite skewness to the right nearly as pronounced as that for the boys. The modal interval for the distribution of girls' Pressey-Nelson I.Q.'s is 118-120 and the mode is 119.0 while the mean I.Q. is 124.0.

When one looks at the mean I.Q.'s in Tables 6 and 7, it is apparent that the boys surpass the girls in mean I.Q. The difference in Otis I.Q. points between the boys and girls, however is rather small, only 1.5 points. The difference between the boys and girls on mean Pressey-Nelson I.Q.'s is more pronounced, 5.3 points, but this too may be due to chance. These results agree with those found by Terman[142] and others. According to Stroud,[143] however, earlier predictions with respect to the absence of sex differences in intellectual status have been indicated. This seeming contradiction may be accounted for by the fact that Terman's results were based upon intelligence scores of superior pupils while those reported by Stroud were based on unselected pupils.

These data in general indicate to us that the pupils selected are of superior intelligence.

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142 Terman, L. M. Genetic Studies of Genius: Mental and Physical Traits of 1000 Gifted Children, Stanford University Press, Palo Alto, 1926, 1:609-60.

143 Stroud, J. B. "Psychological Tests and their Uses," Review of Educational Research 11:34, February, 1941.

D. Data on Achievement Ratios

A distribution of achievement ratios is given below in Table 8.

TABLE 8 - DISTRIBUTION OF ACHIEVEMENT RATIOS FOR BOYS AND GIRLS AND THE TOTAL GROUP

Achievement Ratios	NUMBER OF PUPILS BOYS	GIRLS	TOTAL GROUP
10 to 19	2	0	2
1 to 9	32	17	49
-9 to 0	77	72	149
-19 to -10	34	48	82
-29 to -20	4	7	11
-39 to -30	0	3	3
TOTALS	143	154	297
MEAN	-6	-9	-7

The study of the frequency distribution of the achievement ratios in Table 8 shows that the achievement for boys, girls and total group all form distributions skewed to the left, with the mean for the total group falling at -7, the mean for the boys at -6 and for the girls at -9. The mode for all three groups falls in the 0 to -9 interval.

According to Myers and Buch,[144] an achievement ratio of -7 (i.e. a difference of 7 standard score points between the achievement score and the intelligence score) would occur by chance about 15 times

144 Myers, C. E., Buch, G.M. and Loofbourow, E. G. Myers-Buch High School Progress Test, Manual of Directions. World Book Company, Yonkers-on-the-Hudson, New York, 1[illegible]. p. 4

in a hundred. This is based on the calculation that the probable error for the Myers-Ruch test score is 3 standard score points, for the girls an achievement ratio of -9 would occur by chance about 4 times in a hundred, and for the boys an achievement ratio of -5 would have about 23 chances in a hundred of occurring by chance. It would seem from this that the difference between the achievement scores and the intelligence scores for the girls is likely to be significant as it is 3 times its probable error. The difference between the achievement scores and the intelligence scores for the boys was much lower, and consequently for the total group this difference was lower than it was for the girls, and might have resulted in both of these cases from chance errors.

In all probability, the difference between achievement standard scores and intelligence standard scores for the boys and total group as well as for the girls is a real difference which cannot be disregarded.

These data on achievement ratio merely verify a previously conceived hunch that superior pupils are not progressing in school nearly as well as their intelligence scores indicate they can. It appears from the data given in Table 8 that when school achievement is measured by a standardized achievement test the boys surpass the girls in mean achievement ratio. The chief purpose of this study will be to find some of the factors associated with the low achievement ratios of these superior pupils, both boys and girls.

E. Data on General Scholarship Averages.

Table 9 gives a distribution of data on Scholarship Averages.

TABLE 9 - DISTRIBUTION OF GENERAL SCHOLARSHIP AVERAGES FOR THE SEMESTER COMPLETED PRECEDING THE INVESTIGATION, SEPARATED FOR BOYS AND GIRLS

General Scholarship Averages	NUMBER OF PUPILS		
	BOYS	GIRLS	TOTAL GROUP
90 - 100	12	10	22
80 - 89	52	57	109
70 - 79	40	47	87
50 - 69	7	16	23
TOTALS	111	130	241
MEAN	81.3	80.0	80.4

The distribution in Table 9 above gives the general averages for the September to February, 1940 semester. It includes 241 pupils. General Averages for 9th grade pupils just entering senior high school were not included as well as the averages of 12 pupils who had transferred from out of state schools.

The distribution for the boys, girls, and total group is all skewed to the left. The mean for the total group is 80.4 while the mode is 82.0. The mean for the girls is 80.0 and the mode is 80.1. The mean for the boys is 81.3 and the mode is 82.0. Apparently the girls' mean general average is slightly below that for the boys and the girls' distribution is less highly skewed to the left.

Evidently these superior pupils are doing work from 2 to 4 years below their mental age level. They are certainly not working up to their capacity. It is surprising

to find these girls making poorer average scholarship marks than the boys, even though the difference is so small.

Most authors give girls credit for making better school marks than boys. Lund[145] finds girls definitely superior in achievement in all subjects as far as grades are concerned even if they are matched for intelligence. Cook, Lehman, and Patterson[146] report pronounced difference in scholarship marks in favor of the girls. These reports are illustrative of the trend of findings on the subject. Perhaps, where superior pupils only are studied, the advantage of the girls over boys in school marks disappears. Probably there is a direct connection between this and the fact that the achievement ratios of the boys surpass those of the girls. Certainly if these boys work harder, and have higher achievement ratios, they are less likely to be surpassed in school marks by the girls.

F. Data on Conduct and Effort Marks

Tables No. 10 and 11 show distribution of unsatisfactory conduct and effort marks for the pupils studied.

TABLE NO. 10 - DISTRIBUTION OF THE NUMBER OF UNSATISFACTORY SEMESTER CONDUCT MARKS RECEIVED IN HIGH SCHOOL

Number of Unsatisfactory Semester Conduct Marks	NUMBER OF PUPILS		
	BOYS	GIRLS	TOTAL
0	108	125	233
1	17	17	34
2 or more	18	12	30
TOTALS	143	154	297
MEAN	.4	.3	.3

145 Lund, Frederick H. "Sex Differences in Type of Educational Ambition," Journal of Educational Psychology 33: [illegible], May, 1942.
146 Monroe, Walter S. op.cit. p. 154.

TABLE NO. 11 - DISTRIBUTION OF THE NUMBER OF UNSATISFACTORY SEMESTER EFFORT MARKS RECEIVED IN HIGH SCHOOL

Number of Unsatisfactory Semester Effort Marks	NUMBER OF PUPILS		
	BOYS	GIRLS	TOTAL
0	118	134	252
1	9	12	21
2 or more	16	8	24
TOTAL	143	154	297
MEAN	.3	.2	.2

The very great majority of the pupils studied have satisfactory marks in conduct throughout the time they had spent in high school. The distribution of conduct marks in Table 10 for the boys, girls, and total group is quite definitely skewed to the right because only 64 pupils of the 297 studied received unsatisfactory marks in conduct while they were in high school. It is interesting to note the mean number of unsatisfactory conduct marks received by the boys (.4) is greater than either the mean number of unsatisfactory marks received by the girls (.3) or the mean for the total group (.3). It seems here that in the matter of conduct marks, these pupils of superior intelligence are running true to form, the boys being less satisfactory in conduct than girls.

When the frequency distribution for unsatisfactory semester effort marks in Table 11 is studied, it is observed that the great majority (252) of the pupils had received no unsatisfacory semester effort marks throughout the time they had spent in high school,

while only 45 pupils had received one or more unsatisfactory semester effort marks. Naturally, in the case of the boys, girls, and total group, the distribution was highly skewed to the right. The mean number of unsatisfactory effort marks received by the boys (.3) is again greater than the mean number of unsatisfactory effort marks (.2) received by the girls or by the total group (.2). These findings on conduct and effort of boys and girls are in general agreement with those already found. It is interesting to note that, although the boys' conduct and effort is considered by their teachers to be less satisfactory than the girls', the boys are still able to make better mean scholarship average and achievement test scores than the girls. These differences, however, between the sexes are all too small to indicate that any real difference exists that could not be due to chance.

G. Data on Semesters Failed.

Table No. 12 shows a distribution of the semesters failed by the superior pupils studied while they were attending high school.

TABLE 12 - DISTRIBUTION OF THE NUMBER OF SEMESTERS FAILED IN HIGH SCHOOL, SEPARATED FOR BOYS AND GIRLS.

No. of Semesters Failed in High School	NUMBER OF PUPILS		
	Boys	Girls	Total Group
0	128	148	276
1 or more	15	6	21
TOTALS	143	154	297
MEAN	0	0	.1

The frequency distribution of the number of semesters failed by the pupils of superior intelligence is highly skewed to the right for boys, girls, and the total group. Only 21 of the 297 pupils studied had failed one or more semesters in high school. This is a rather small percentage of semester failures for this particular group, but it may be explained by the fact that high school pupils who fail one or more semesters very frequently drop out.

It would be interesting to note how many superior pupils who start high school drop out because of failure. Unfortunately, the data collected did not cover this aspect of the problem. Again it must be noted that more boys than girls failed one or more semesters while in high school, while the mean number of failures for the total group was only .1 of one semester failed in high school.

H. Data on Semesters Accelerated

Table 13 shows the number of semesters these pupils of superior intelligence have skipped throughout their attendance at school from the first grade on.

TABLE 13 - DISTRIBUTION OF THE NUMBER OF SEMESTERS SKIPPED THROUGHOUT ATTENDANCE IN ALL SCHOOLS, SEPARATED FOR BOYS AND GIRLS.

No. of Semesters Skipped	NUMBER OF PUPILS		
	BOYS	GIRLS	TOTAL GROUP
0	68	74	142
1	25	42	67
2	33	32	65
3 or more	17	6	23
TOTAL	143	154	297
MEAN	1.0	1.2	1.1

The frequency distribution for the number of semesters accelerated or skipped shows a considerable number of pupils skipping semesters. This data covers the grades skipped throughout the pupils' attendance at school from the first grade on.

The distribution was again skewed to the right for the boys, girls, and total group. 142 pupils had not skipped any grades, while 155 had skipped one or more semesters during their school career. The mean number of semesters skipped for the total group was 1.1. The mean number of semesters skipped for the girls was 1.2, a trifle greater than the mean number of semesters skipped for the boys (1.0).

I. Summary of Data on Achievement for Superior Pupils.

Data on achievement test scores for the group indicates that the superior pupils are considerably above average for achievement, that the boys excel the girls in mean achievement test scores.

The data on mental ages gives the boys a slight superiority over the girls.

The data on I.Q's gives the boys superiority over the girls in mean Otis Intelligence Quotients and the Henmon-Nelson Intelligence Quotients. The mean I. Q. for the total group on the Otis is 123.6 and on the Henmon-Nelson is 126.6.

Data on achievement ratios give the boys definite superiority over the girls and indicate that the achievement of both boys and girls in high school subjects is considerably lower than might be expected, using their intelligence scores as measures

of promise.

The data on general scholarship averages indicate that these superior pupils are doing good work on the average and that the boys are doing slightly better than the girls.

The data on conduct and effort marks indicate that the pupils of superior intelligence receive relatively few unsatisfactory conduct and effort marks in high school and that the boys receive more unsatisfactory marks in conduct and effort than the girls.

The data on semesters failed show that the boys fail more semesters in high school than the girls, but that either a very small number of superior pupils fail semesters in high school or, is they do fail, they do not continue in high school.

The data on semesters accelerated in school shows that the girls skipped more semesters than boys throughout their school career, and that the average number of semesters skipped is just a trifle over one for the pupils studied.

There is nothing especially startling about these data except that wherever the boys are compared with the girls, the girls suffer by comparison except in the matters of semesters skipped, semesters failed, and conduct and effort marks. The boys excel the girls in mean achievement test scores, mean mental ages, mean intelligence quotients, mean achievement ratios, and mean scholarship averages. These results are summarized in Table 14.

TABLE 14 - COMPARISON OF BOYS, GIRLS, AND TOTAL GROUP IN VARIOUS MEASURES OF ACHIEVEMENT AND INTELLIGENCE

	Intelligence (Otis I.Q.) Mean	Achievement Standard Score Mean	Teachers Marks General Average Mean	Otis Mental Age (in months) Mean	Achievement Ratio Mean
Boys (143)	124.4	59.2	81.3	224.9	-5.419
Girls(154)	122.9	55.9	80.	223.3	-8.571
Totals(297)	123.6	57.5	80.4	224.1	-7.054

	No. of Semesters Failed - Mean	No. of Semesters Accelerated-Mean	No. of "U" Conduct Semester Marks in High School-Mean	No. of "U" Effort Semesters Marks in High School - Mean
Boys	0.0	1.0	0.4	0.3
Girls	0.0	1.2	0.3	0.2
Total	0.1	1.1	0.3	0.2

CHAPTER V.

THE RELATION OF ACHIEVEMENT RATIO TO PERSONALITY TEST SCORES

A. The Relation of Scores on the "Washburne Social-Adjustment Inventory" to Achievement Ratio

   1. Truthfulness to Achievement Ratio

   2. Happiness to Achievement Ratio

   3. Alienation to Achievement Ratio

   4. Sympathy to Achievement Ratio

   5. Purpose to Achievement Ratio

   6. Impulse-Judgment to Achievement Ratio

   7. Control to Achievement Ratio

   8. Washburne Total Scores to Achievement Ratio

B. The Relation of Scores on the "Link Inventory of Activities and Interests" to Achievement Ratio

   1. Social Initiative to Achievement Ratio

   2. Self-Determination to Achievement Ratio

   3. Economic Self-determination to Achievement Ratio

   4. Adjustment to Opposite Sex to Achievement Ratio

   5. Overall Personality Quotient to Achievement Ratio

6. Summary

   1. Results related to previous studies on personality

CHAPTER V.

THE RELATION OF ACHIEVEMENT RATIO TO PERSONALITY TEST SCORES

Two personality test batteries were administered to every pupil participating in the study. The scores obtained on these personality tests were used as a basis for comparing personality with achievement ratio.

The Relation of Scores on the "Washburne Social-Adjustment Inventory" to Achievement Ratio.

The Washburne Social-Adjustment Inventory, Plaspic edition, is made up of 7 subtests. The relation of the achievement ratios of the boys, girls and total group with the personality scores on these 7 subtests and the Washburne total score was found.

The Relation of Achievement Ratio to Truthfulness

A screening test of truthfulness was given to all the pupils, composed of questions designed to reveal carelessness or misrepresentation in replies. These questions scattered throughout the Washburne Inventory were of such a nature that the apparently desirable answers indicated inaccuracy or lying. The frequency table 15 and graph, Figure 1, below contain and illustrate these data.

The great majority of the cases in this study made rather low scores on the truthfulness subtest and, consequently, rated rather high for truthfulness. The distribution appeared to be close to the normal, being a bit skewed toward the right by the preponderance of low scores indicating excellent adjustment as far as truthfulness was concerned.

TABLE 15

Distribution showing the Relation of Achievement Ratios to Washburne Truthfulness Scores Giving the Means for Boys and Girls Separately

TRUTHFULNESS SCORES

Achievement Ratio		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-74	Totals
10 to 19		1		1						2
1 to 9		7	8	13	3	7	4	6	1	49
-9 to 0		21	23	33	23	19	10	5	15	149
-19 to -10		8	20	18	13	5	2	7	10	83
-29 to -20		1		2	3	1	2	1	1	11
-39 to -30					1	1	1			3
	N	38	51	67	43	33	19	19	27	297
	M	-5	-7	-6	-9	-6	-8	-7	-9	-7
Boys	N	14	24	39	17	15	9	10	15	143
	M	-2	-6	-5	-7	-5	-4	-6	-8	-5
Girls	N	24	27	28	26	18	10	9	12	154
	M	-7	-8	-7	-11	-7	-11	-7	-12	-9

F (total group) = 10.53; p = .01

ACHIEVEMENT RATIOS AND

FIG. 1 WASHBURNE TRUTHFULNESS SUBTEST SCORES

The "F" test was used, and a value of 10.831 was obtained for the group as a whole. Evidently a relationship significant at the one per cent level exists between achievement ratio and truthfulness scores of the superior pupils studied. When the graphic relationship as shown in Figure 1 is studied, it appears that the relationship is positive but rather small.

The pupils making the lowest scores, indicating they are well adjusted for truthfulness, had the highest mean achievement ratios. The poorly adjusted or untruthful pupils had the lowest mean achievement ratios.

This relationship held with very little variation for both boys and girls.

The main characteristic of this graph showing the relationship between truthfulness scores and achievement ratios is perhaps its fluctuation around the mean. This characteristic is probably as important as the fact that there is a significant positive relationship between achievement ratio and truthfulness.

This significant association of truthfulness with high achievement ratio may be accounted for in several ways. The pupil who is more nearly achieving up to his capacity is more likely to be doing satisfactory work and consequently will have less occasion to be untruthful in order to make a good impression. On the other hand, the habit or trait of untruthfulness may have been developed by some pupils to such an extent that it will have a detrimental effect on the teacher's relationship with the pupil, and the pupil will resort to untruthfulness rather than to real achievement in order to get by.

The Relation of Achievement Ratio to Happiness

On the happiness subtest of the Washburne Social-Adjustment Inventory, a low score indicates excellent adjustment, while a high score indicates poor adjustment for this personality trait. This is true for the remaining subtests in this inventory.

The frequency Table 16 and the graphic Figure 2 contain and illustrate the data collected on this relationship between achievement ratio and happiness.

223 pupils of the group received happiness scores indicating normal or better adjustment. 49 cases are rated low normal in adjustment for the trait, while only 25 are borderline or maladjusted.

The distribution of Washburne happiness scores is definitely skewed to the right because of the great number of cases falling in the low score categories.

The F test calculated for the total group is 7.56 which is significant at the one per cent level.

Apparently a relationship that is significant exists between achievement ratio and Washburne happiness subtest scores. Reference to the graph showing the relationship between achievement ratio and Washburne happiness scores in Figure 2 indicates that this significant relationship is negative.

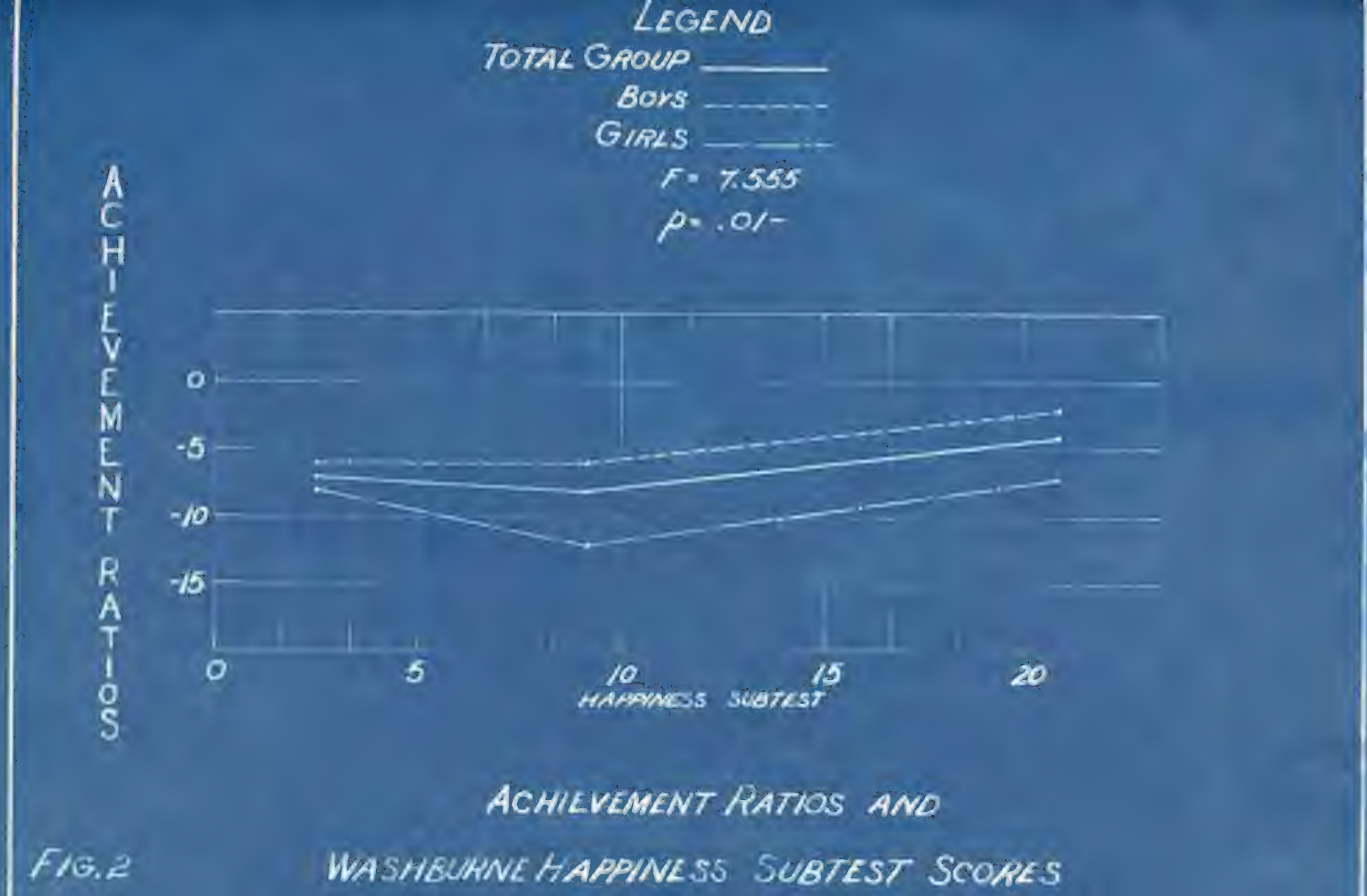
When the low normal group is compared with the poorly adjusted pupils for this trait, a noticeable difference between these two groups is discovered. The pupils who have low normal happiness scores make achievement ratios below the mean for the group, while the pupils

TABLE 16

Distribution Showing the Relation of Achievement Ratios to Washburne Happiness Scores Giving the Means for Boys and Girls Separately.

	WASHBURNE HAPPINESS SCORES			
Achievement Ratio	0-5	6-11	12-29	Total
10 to 19		1	1	2
1 to 9	36	8	5	49
-9 to 0	118	17	14	149
-19 to -10	58	20	5	83
-29 to -20	10	1		11
-39 to -30	1	2		3
N	223	49	25	297
M	-7	-8	-4	-7
Girls N	121	23	10	154
M	-8	-12	-7	-9
Boys N	102	26	15	143
M	-6	-6	-2	-6

F (total group) = 7.555; p = .01



ACHIEVEMENT RATIOS AND

FIG. 2 WASHBURNE HAPPINESS SUBTEST SCORES

who are borderline and maladjusted make achievement ratios definitely above the mean. The low normal cases dropped considerably in mean achievement ratio, while the poorly adjusted cases excelled all others in mean achievement ratio.

In achievement ratio the well adjusted pupils rank slightly ahead of the pupils who are low normal in adjustment for happiness, but definitely below those pupils who are maladjusted as indicated by this happiness subtest.

The same relationship between happiness scores and achievement ratio holds for both boys and girls when they are considered separately. For boys and girls as for the group as a whole, the normal and poorly adjusted pupils excel the low normal adjustment cases in mean achievement ratio.

This significant negative, although slight, relationship between achievement ratio and happiness scores may be accounted for in several ways.

The fact that there are only 25 borderline and maladjusted cases may account for this deviation from the general trend, or it may be that pupils who are very unhappy spend a greater proportion of their time away from their fellows in comparative seclusion and thus find more time to study and advance scholastically. It may be that up to a certain point, the more unhappy you are, the less your achievement ratio will be, because of a poor adjustment to your surroundings; but beyond this point, an increase in unhappiness may cause you to spend more time in individual activities not associated with a social group, which in turn may result in increased achievement ratio.

The Relation of Achievement Ratio to Alienation

Alienation is described by Washburne[148] as including a sense of social membership, similarity, psychological security, and emotional stability in social situations. A low score on the alienation subtest of the Washburne Inventory indicates satisfactory social and emotional adjustment as revealed in a sense of non-alienation.

Table 17 and Figure 3 contain and illustrate the data gathered on this variable. Of the 297 pupils studied, 75 are poorly adjusted as revealed in a poor alienation score. The remaining 222 pupils have normal or above adjustments, according to the standards previously set up by Washburne.[149]

The F test for the total group showed that there is a relationship between achievement ratio and alienation, significant at the one per cent level. When the graphic relationship between achievement ratio and alienation in Figure 3 is studied, it is observed that this relationship is negative. As the achievement ratio increases, the score on the alienation subtest increases, indicating an increased lack of adjustment as the achievement ratio increases.

There is considerable fluctuation in the curve for boys and girls, but the curve for the total group maintains a consistent upward slope. When the relationship between the achievement ratios for

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148 Washburne, John N. Washburne Social Adjustment Inventory (Thesis Edition) Manual for Interpreting, World Book Co., Yonkers-on-Hudson, New York, 1940. p. 4.

149 Ibid. p. 4.

the boys and alienation is considered, it is noticed that the curve rises uniformly until it reaches the 31-40 interval. It then takes a sudden drop from excelling the girls and total group in achievement ratio to being excelled by the girls and total group. From here on, it rises slowly but steadily. It must be remembered that there are only 9 cases in the 31-40 interval and that this is quite possibly the reason for this fluctuation. When the curve for the relationship between the girls' achievement ratios and alienation in the Figure 3 is studied, the opposite trend is noted. The curve for the achievement ratios of the girls is uniformly downward until the 31-40 interval for alienation scores is reached, when it takes a sudden rise and from this point on falls slowly to the end of the distribution. This fluctuation is due to only 9 cases. The fluctuation around the 31-40 interval in the curves for boys and girls may be discounted because of the small number of cases in this particular interval as shown in the frequency Table 17.

The uniform negative relationship between achievement ratio and adjustment for alienation might be accounted for in this way. Because alienation consists of such things as social membership, psychological security, and emotional stability in social situations, a pupil lacking in this constellation of traits may tend to be more of the introvert, individualistic type and less of a social being; and, consequently, have more time for such individual labors as school work.

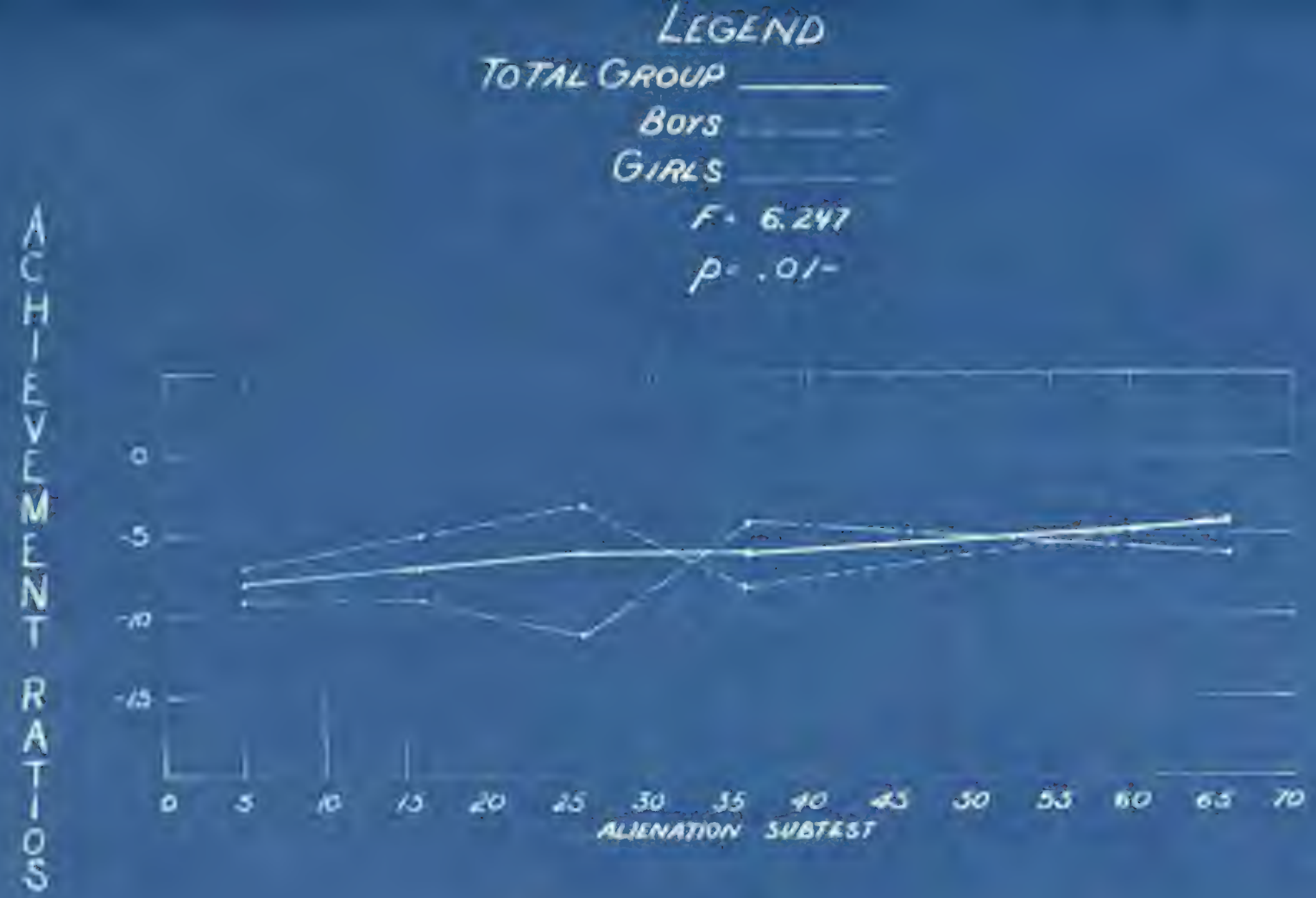
Conversely, those social, secure, stable pupils probably devote more time to out of school activities and less time to actual study and this would account for their lower achievement ratios.

TABLE 17

Distribution Showing the Relation of Achievement Ratios to Washburne Alienation Scores Giving the Means for Boys and Girls Separately.

	WASHBURNE ALIENATION SCORES					
Achievement Ratio	0-10	11-20	21-30	31-40	41-90	Total
10 to 19			1		1	2
1 to 9	20	13	6	4	6	49
-9 to 0	65	47	13	7	12	149
-19 to -10	44	22	7	6	4	83
-29 to -20	6	3	1		1	11
-39 to -30	1	1	1			3
N	136	86	34	17	24	297
M	-8	-7	-6	-6	-4	-7
Girls N	80	45	14	8	7	154
M	-9	-9	-11	-4	-6	-9
Boys N	56	41	20	9	17	143
M	-7	-5	-3	-8	-4	-6

F (total group) = 6.247; p = .01-



ACHIEVEMENT RATIOS AND

FIG. 3 WASHBURNE ALIENATION SUBTEST SCORES

The Relation of Achievement Ratio to Sympathy

The term, sympathy, is defined as "sympathetic, empathetic, non-negative responsiveness to people."[150]

A low score on the Washburne[150] Social-Adjustment Inventory sympathy subtest indicates a satisfactory social and emotional adjustment as reflected in sympathy.

Table 18 and Figure 4 contain and illustrate the data on this variable. According to the standards set up by Washburne, the great majority (251) of the pupils receive scores indicating that they are low normal or better as far as sympathy is concerned. The remaining 46 cases are below low normal in adjustment on this trait.

The F test for the total group gave an F of 13.38, showing that there is a significant relationship between Washburne sympathy scores and achievement ratio for this group of 297 pupils. When the graphic relationship is referred to, it is noticed that the relationship is negative; that is, the higher the achievement ratio, the poorer the adjustment for sympathy. The curves for boys, girls, and total group are characterized by considerable fluctuation.

The general trend for the total group is rather consistent, except at the end of the curve, where the maladjusted pupils shows a slight drop in achievement ratio. The curve for the boys shows considerable fluctuation, starting out 6 achievement ratio points above the curve for the total group and 7 above the curve for the girls. The curve then continues to fall uniformly until it reaches the 16-19 interval where it takes a

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150 Ibid. p. 6.

sudden rise, and from this point on drops slowly to the end of the distribution. The curve for the girls fluctuates considerably. It is up and down throughout the course of the graph, indicating a rather inconsistent negative relationship between achievement ratio and sympathy scores for the girls.

As can be noted by referring to Table 18, the girls as a group are considerably more sympathetic than the boys. The cases for the boys tend to fall toward the unsympathetic end of the curve, while the cases for girls tend to cluster toward the sympathetic end of the curve.

This slight although significant negative relationship between achievement ratio and sympathy scores may be accounted for in this way. The people who are likely to have high achievement ratio scores are likely to be working closer to their capacities, are less likely to take time enough to exhibit sympathetic tendencies toward their companions; and, as a consequence, people with higher achievement ratios will have lower sympathy scores.

Girls are as a group generally more tender-hearted than boys and mentally superior girls appear to be no exception. Perhaps this characteristic of girls is responsible for the negative relationship existing between sympathy and achievement ratio.

The Relation of Achievement Ratio to Purpose

A low score on the Washburne purpose subtest indicates satisfactory adjustment as revealed in a sense of purpose, i.e. "desire definitely directed toward a goal involving plan, evaluation, selection, and effort."[151] This subtest was given to 297 pupils. Table 19 and Figure 8 contain and

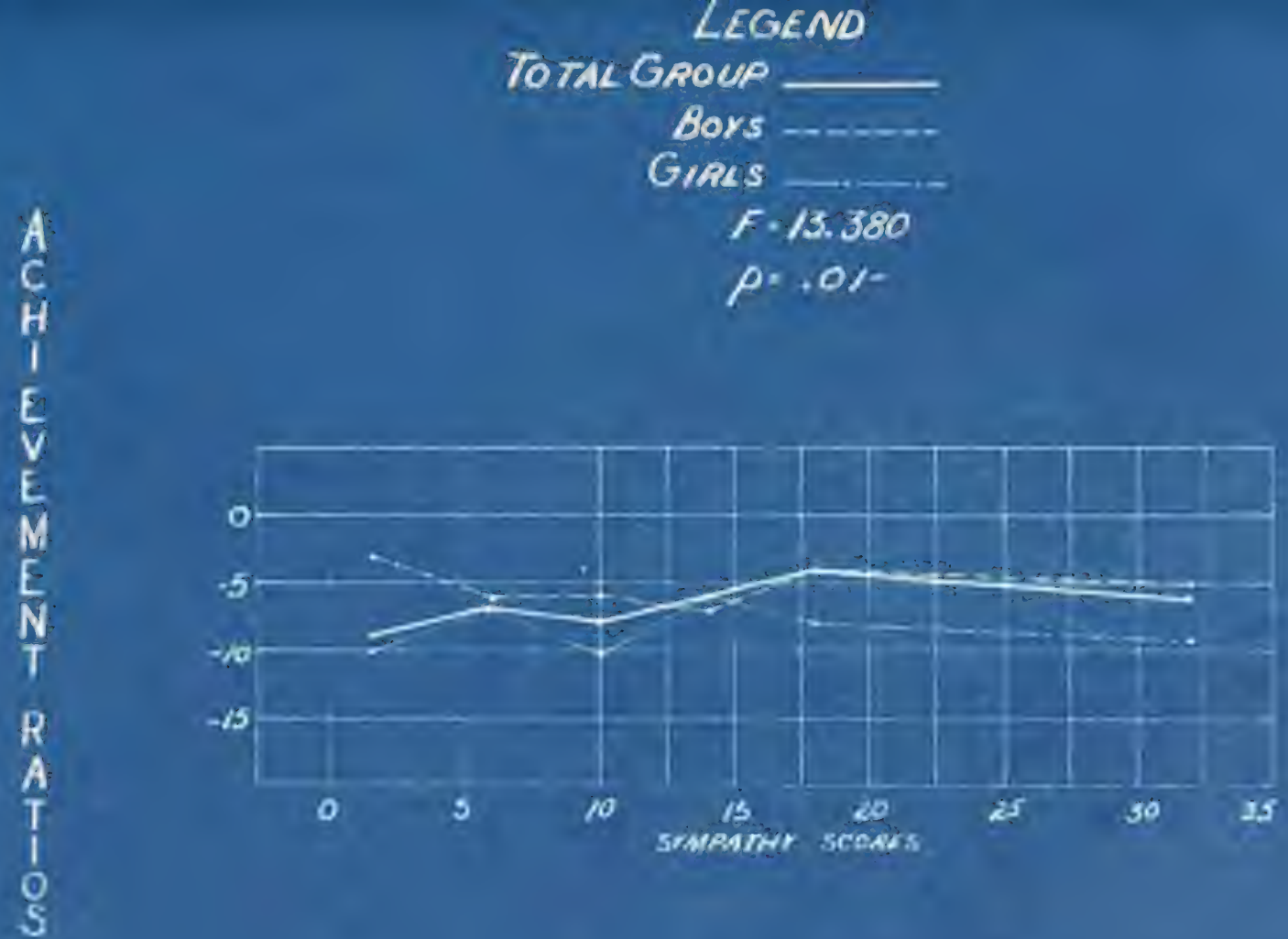
151 Ibid. p. 6.

TABLE 18

Distribution Showing the Relation of Achievement Ratios to Washburne Sympathy Scores Giving the Means for Boys and Girls Separately

		WASHBURNE SYMPATHY SCORES						
Achievement Ratio		0-3	4-7	8-11	12-15	16-19	20-43	Totals
10 to 19		1					1	2
1 to 9		5	9	6	10	10	9	49
-9 to 0		24	35	25	24	18	23	149
-19 to -10		18	13	24	11	6	11	83
-29 to -20		5			3	1	2	11
-39 to -30		1	2					3
	N	54	59	55	48	35	46	297
	M	-9	-7	-8	-6	-4	-6	-7
Girls	N	50	38	29	20	7	10	154
	M	-10	-7	-10	-6	-8	-8	-9
Boys	N	4	21	26	28	28	36	143
	M	-3	-6	-6	-7	-4	-5	-5

F (total group) = 13.380; p = .01-



ACHIEVEMENT RATIOS AND
WASHBURNE SYMPATHY SCORES

FIG. 4

illustrate the data collected on this variable.

An examination of the data in Table 19 on the total group shows that 218 pupils, 116 girls and 102 boys, made scores indicating normal or better adjustment for this personality trait, according to the norms set up by Washburne. The remaining 75 borderline or maladjusted pupils includes 38 girls and 41 boys.

The distribution of purpose scores closely follows that for a normal population, again being a trifle skewed toward the lower end of the distribution. The mean and the mode fall in the same interval, 48 to 54, which is normal according to Washburne.

The F test for significance for the total group yielded a value of 11.974 which is significant at the one per cent level. There are 99 chances in 100 that a relationship exists between achievement ratio and purpose subtest scores for these pupils. When the graphic relationship as shown in Figure 5 is studied, it appears that the relationship is linear, positive and small. The chief characteristic of the graphic illustration of the relationship is its fluctuation. No uniform trend is evident. As might be expected, the fluctuation is greatest at the ends of the curve where the number of cases in each category is smallest. The pupils making comparatively low scores, indicating excellent adjustment, on the purpose subtest in the 27-33 interval have the highest mean achievement ratios; and the pupils making comparatively high scores in the 69-75 interval on the purpose subtest make the lowest mean achievement ratios for the total group.

Apparently, good adjustment as measured by the Washburne Purpose subtest is positively related to high achievement ratio for pupils of superior intelligence.

When the relationship between the achievement ratios and purpose scores is studied of the boys only, it is observed that the fluctuation is less and the positive relationship is apparently increased.

When the relationship for the girls only is studied, the fluctuation is observed to increase and the positive relationship seems to disappear.

The positive relation between achievement ratio and puspose as indicated by the Washburne test may be accounted for in several ways. First it must be remembered that the relationship is small and that there is a chance in a hundred that it does not exist at all. Granted, however, that a relationship of small degree exists between achievement ratio and purpose, it may be that high achievement ratios are encouraged by proper adjustment for purpose, as defined by Washburne.

Quite probably a definite puspose serves as an incentive to superior pupils to higher achievement in school. This is more likely to be true if the pupil's purpose is associated with furthering his education. This, too, would account for the differences between the girls and boys. The purposes of the boys are possibly more dependent on success in school than those of the girls and consequently, this would account for the higher relation between achievement ratio and purpose scores of the boys. The purposes of girls may not be closely dependent on school success and this would account for the diminished relation between the achievement ratios and purpose scores of the girls.

It may be that both high achievement ratios and good purpose adjustments are caused by a third factor or group of factors. In the opinion of

the author, the second hypothesis is true as an excellent adjustment for purpose helps a pupil, particularly a boy of superior intelligence, make a high achievement ratio.

The Relation of Achievement Ratio to Impulse-Judgment

A low impulse-judgment score indicates satisfactory adjustment as far as impulse-judgment is concerned. This term may be defined as "the ability to judge well between conflicting impulses, so that satisfactions which are recognized as greater, but more remote or more difficult, are not discounted in favor of easier or more immediate but obviously lesser satisfactions."[152]

The frequency Table 20 and Figure 6 contain and illustrate the data collected on this variable. The frequency distribution of Washburne Impulse-Judgment scores shown in Table 20 is highly skewed to the right as are the distributions of the boys and girls.

259 cases (135 girls and 124 boys) have normal or better adjustments for impulse-judgment according to the standards set up by Washburne. Only 38 cases are border line or maladjusted for this trait. 19 are girls and 19 are boys.

The F test for this variable for the total group yielded a result of 6.269, which is significant at the one per cent level, indicating that a relationship exists between achievement ratio and Washburne impulse-judgment scores.

When the graphic relationship in Figure 6 is studied, it is observed that the curve for the total group is a very flat bell-shaped curve, with the great majority of the cases on the left side of the curve. The indication is that the relationship between the variable and achievement

152 Washburne, J.N. Washburne Social-Adjustment Inventory, Manual of Directions. Yonkers-on-Hudson, N.Y., World Book Company, 1940. p.6-7.

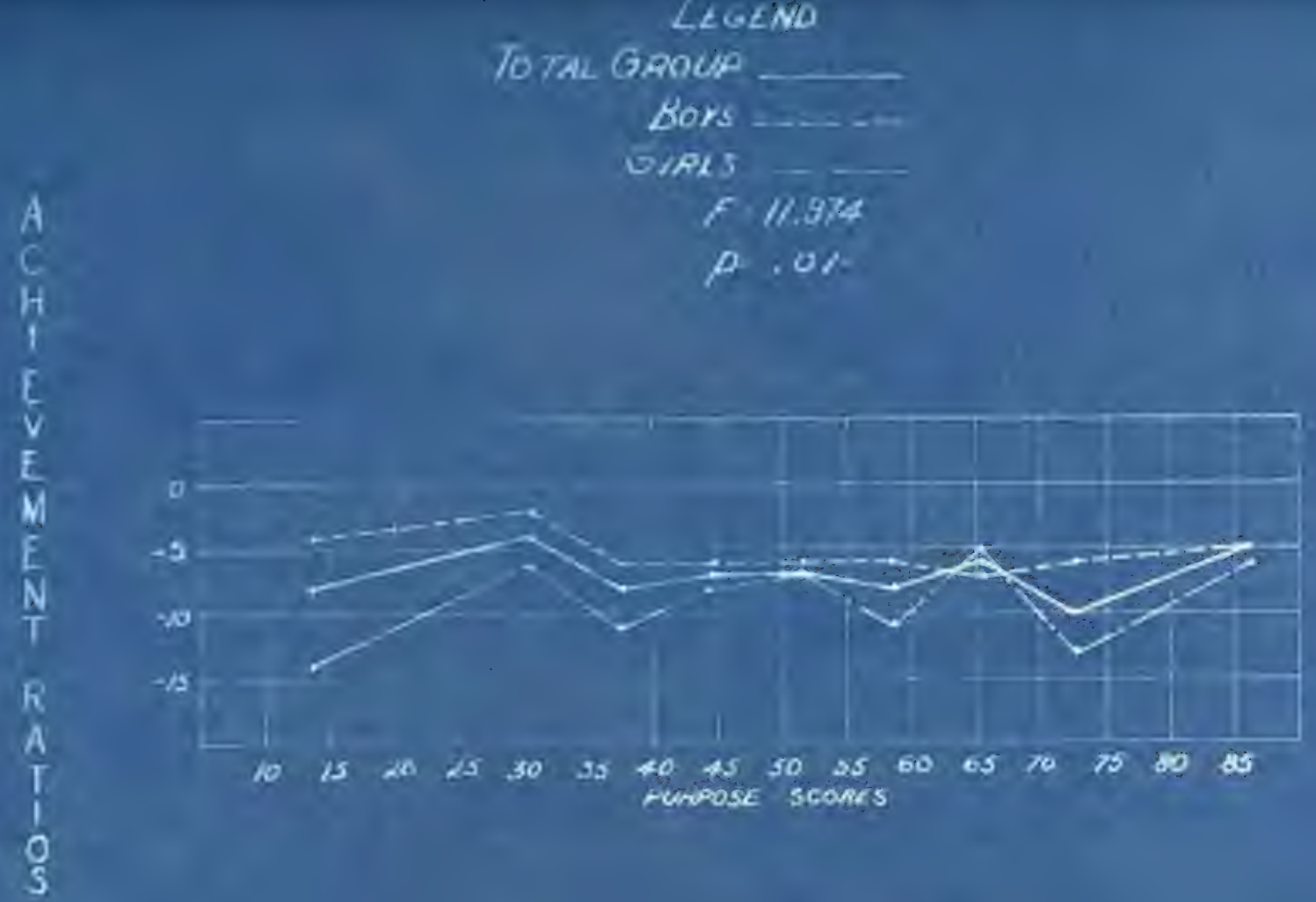
TABLE 19

Distribution Showing the Relation of Achievement Ratios to Washburne Purpose Scores Giving the Means for Boys and Girls Separately.

WASHBURNE PURPOSE SCORES

Achievement Ratio		0-26	27-33	34-40	41-47	48-54	55-61	62-68	69-75	76-96	Total
10 to 19			1				1				2
1 to 9		4	6	7	7	7	4	5	3	6	49
-9 to 0		3	19	22	22	32	21	14	3	8	149
-19 to -10		6	5	17	9	6	15	8	10	7	83
-29 to -20				1	3	3	3		1		11
-39 to -30		1		1		1					3
	N	19	31	48	41	49	44	27	17	21	297
	M	-8	-4	-8	-7	-7	-8	-6	-10	-5	-7
Girls	N	7	16	23	24	28	26	9	10	11	154
	M	-14	-6	-11	-8	-7	-11	-5	-13	-6	-9
Boys	N	12	15	25	17	21	18	18	7	10	143
	M	-4	-2	-6	-6	-6	-6	-7	-6	-5	-5

F (total group) = 11.974; p = .01-



ACHIEVEMENT RATIOS AND WASHBURNE PURPOSE SCORES

FIG. 5

ratio is rather negative, i.e. the better the adjustment for Washburne impulse-judgment, the lower the achievement ratio. The highest mean achievement ratio for both the girls and total group occurs at the intermediate 8 to 9 interval on the Washburne impulse-judgment scores. Scores in this interval on the Washburne impulse-judgment subtest are considered to be an indication of low normal adjustment for this particular trait. No uniform trend is noticeable in the graphic relations shown in Figure 6. Fluctuation seems to be the dominant characteristic of the 3 line graphs shown in this figure.

The boys seem to differ from the girls and the total group as well, in that the relationship between Washburne impulse-judgment scores and achievement ratio appears to be slightly positive. The highest achievement ratios for the boys occur at the 2 to 3 interval for the Washburne impulse-judgment scores, and the lowest mean achievement ratio for the boys occurs at the opposite end of the curve at the 12 to 25 interval. This general positive trend on the part of the boys is counteracted by the fact that considerable numbers of cases fall in the first interval, and the trend from the first to the second interval is decidedly negative.

Although there is a significant relationship existing between Washburne impulse-judgment scores and achievement ratios, it is evident by study of the graphic relationships that these relationships are rather slight in degree.

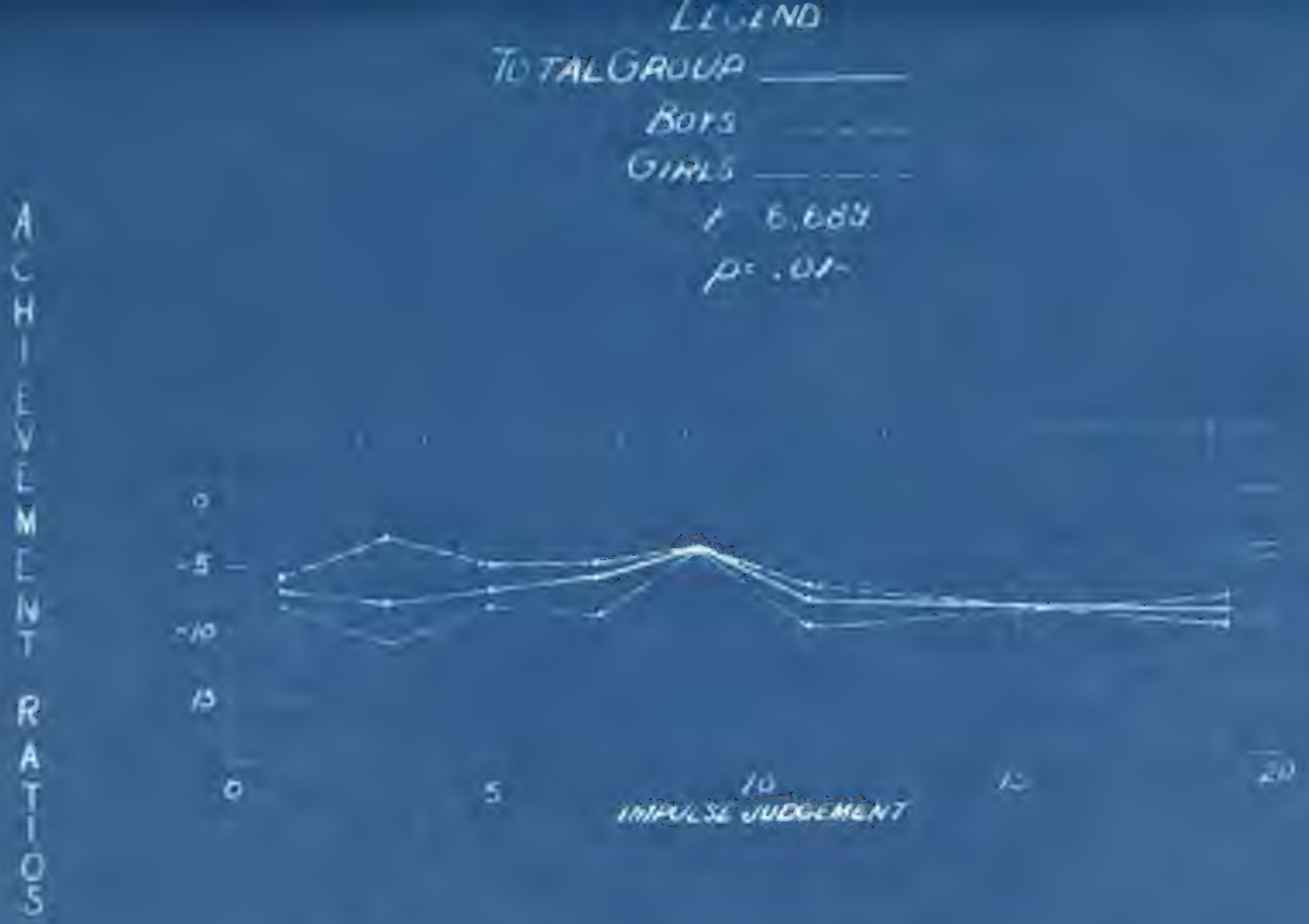
These relationships may be accounted for in a number of ways. Twenty-one pupils having low average impulse judgment adjustments have little ability to judge between conflicting impulses and often select satisfactions which are lesser but more immediate. This personality weakness is associated with high achievement ratio and is somewhat difficult to

TABLE 20

Distribution Showing the Relation of Achievement Ratios to Washburne Impulse Judgment Scores Giving the Means for Boys and Girls Separately

Achievement Ratio		WASHBURNE IMPULSE JUDGMENT SCORES							
		0-1	2-3	4-5	6-7	8-9	10-11	12-25	Total
10 to 19		1				1			2
1 to 9		14	11	7	8	2	3	4	49
-9 to 0		53	23	30	20	10	10	3	149
-19 to -10		28	17	13	7	2	7	9	83
-29 to -20		4	2	2	2			1	11
-39 to -30			2				1		3
	N	100	55	52	37	15	21	17	297
	M	-7	-8	-7	-6	-4	-8	-9	-7
Girls	N	51	34	31	11	8	10	9	154
	M	-8	-11	-8	-9	-4	-10	-8	-9
Boys	N	49	21	21	26	7	11	8	143
	M	-6	-3	-5	-5	-4	-7	-10	-5

F (total group) = 6.689; p = .01-



ACHIEVEMENT RATIOS AND

WASHBURNE IMPULSE JUDGEMENT

SCORES

FIG 6

account for. Perhaps excellence in school achievement may result from just such traits. However, when the adjustment for impulse judgment becomes extremely poor the achievement ratio drops sharply. This may be the result of complete inability to select school tasks as desirable satisfactions to be attained.

The boys differ from the girls in that those boys showing average adjustment drop in achievement ratio while the girls rise in mean achievement ratio. Possibly this is a chance fluctuation. Perhaps it is a fundamental difference between boys and girls of superior intelligence. At any rate, the general negative relationship existing between impulse judgment and achievement ratio is the important finding.

The Relation of Achievement Ratio to Control

A low score on the control subtest of the Washburne S-A Inventory indicates satisfactory adjustment as shown in a sense of "self-control, self-regulation, and ability to make and execute plans."[153] Table 21 and Figure 7 give the data collected on this variable.

By referring to the frequency distribution of the control subtest scores in Table 21, one can see that the great majority of the cases, 261, have scores under 24 which, according to Washburne, indicate low normal or better adjustment for control. Of these 261 cases 134 are girls and 127 are boys leaving a total of 36 pupils, 20 girls and 16 boys who made scores indicating maladjustment for control. As a result the distributions of control scores are skewed to the right for the boys, girls and total group - where the cases pile up at the lowest intervals.

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153 Washburne, J. N. Washburne Social-Adjustment Inventory, Manual of Directions. World Book Company, Yonkers-on-Hudson, N. Y. 1940, p. 7.

The F test yields a value of 6.002 for the total group which is significant at the one per cent level. There are more than 99 chances in 100 that a relationship exists between the achievement ratios and the control scores of these pupils of superior intelligence.

The graph in Figure 7 for the total group indicates that the group of 102 pupils having the lowest control scores, indicating best adjustment, have the highest mean achievement ratio, while the group of 101 pupils having the next lowest mean control score have the lowest mean achievement ratio; and from this point on the curve gradually rises. The relationship existing between control scores and achievement ratios is a positive linear relationship thrown off perhaps by a relatively small number of cases in the intervals at the maladjusted end of the control distribution, or the distribution is curvilinear of the inverted bell type, possibly skewed to the right.

It is interesting to note that this noticeable drop in mean achievement ratio at the second interval in the control scores distribution occurs in both the boys' and girls' distribution as well as for the total group. The drop in achievement ratio at this second interval is more noticeable for the boys than it is for either the girls or the total group.

Judging from these data a normal adjustment on the control subtest is more closely associated with a low achievement ratio than is either a good or poor adjustment.

This association of low achievement ratio with normal adjustment for control may have several explanations.

There are only 94 cases in the poor adjustment end of the control distribution, and this relatively smaller number of cases as compared to 20% cases in the better adjustment end of the distribution may be indicating an association between poor adjustment control scores and high achievement ratios which does not exist. The relationship between control adjustment and achievement ratio may be positive throughout; i.e., the better the control adjustment the better the achievement ratio.

Then again it may be that high achievement ratio is associated with both good and poor control adjustment, but for two different reasons. Perhaps a well adjusted pupil, well adjusted for control, would have a natural advantage in progressing in school and so make a correspondingly higher achievement ratio. On the other hand poor adjustment for control may have a compensating advantage by increasing the pupil's achievement ratio through reducing his social adjustment cutting him off to a certain degree from his association with his fellows and increasing his attention to such things as school progress, which require little association with others socially.

Even though the F test indicates a significant relationship between achievement ratio and control adjustment exists, it may be present only to a slight degree. This relationship may be caused by either of the variables or by a third variable effecting both.

The Relation of Achievement Ratio to Washburne Total Scores

The Washburne total score is a composite score made up of the total of all of the subtest scores. It is a measure of the total social adjustment of the individual tested. The relation of Washburne total scores to achievement ratio may be considered a summary of the relationships between the various subtest scores and achievement ratio.

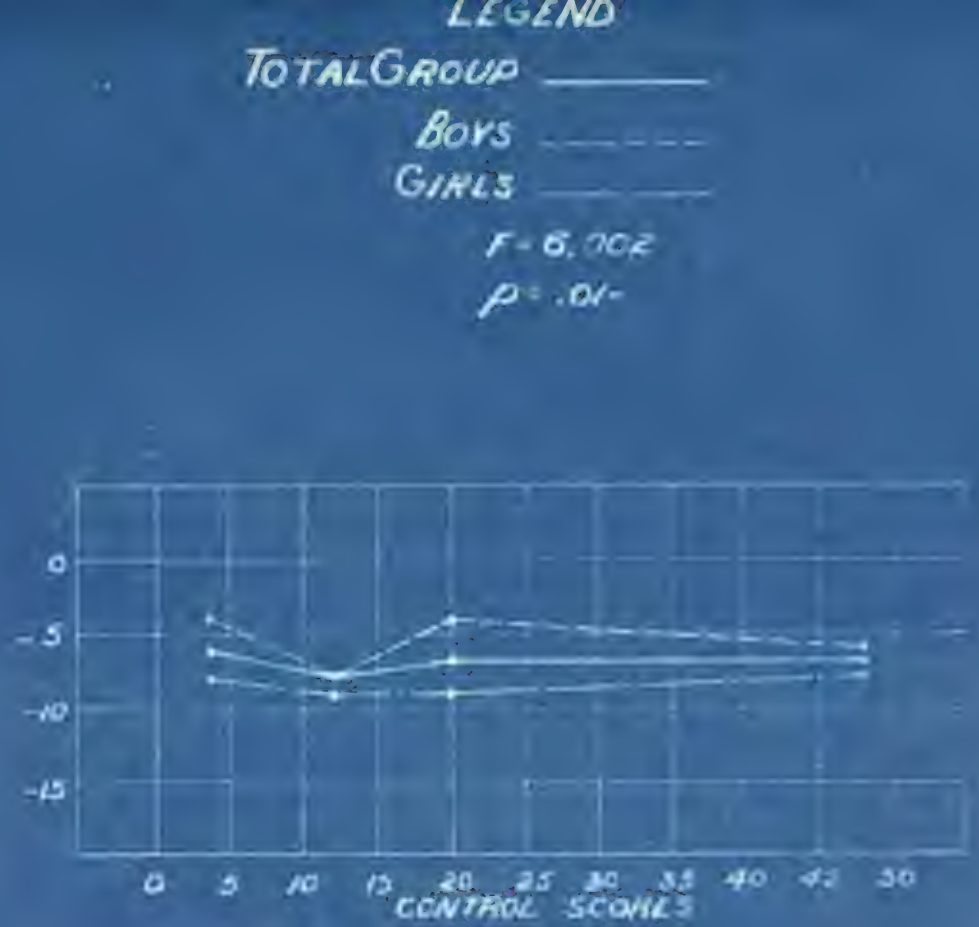
TABLE 11

Distribution Showing the Relation of Achievement Ratios to Thalhourne Control Scores Giving the Means for Boys and Girls Separately.

THALHOURNE CONTROL SCORES

Achievement Ratio		0-7	8-15	16-23	24-71	Total
10 to 19			1	1		2
1 to 9		22	10	11	6	49
-9 to 0		51	51	37	20	149
-19 to -10		27	32	16	8	83
-29 to -20		1	7	2	1	11
-39 to -30		1		1	1	3
	N	102	101	58	36	297
	M	-6	-8	-7	-7	-7
Girls	N	50	54	30	20	154
	M	-6	-9	-9	-8	-9
Boys	N	52	47	28	16	143
	M	-4	-6	-4	-6	-6

F (total group) = 6.002; p = .01-



ACHIEVEMENT RATIOS AND

FIG. 7 WASHBURNE CONTROL SCORES

Table 22, giving the distribution showing the relation of achievement ratios to Washburne total scores, shows clearly that the distribution is skewed a trifle to the right because of the piling up of scores toward the better adjustment end of the score. The Washburne test is set up so that a score of 100 indicates a normal personality adjustment. For the 297 pupils tested, 34 are definitely superior in their adjustment as measured by the Washburne S-A Inventory, 85 are above normal in adjustment, 76 cases fall in the lower half of the normal group, 55 are definitely low normal in adjustment, 67 are borderline cases, and only 10 are definitely maladjusted.

Table 22 shows that the distribution for the girls is even more highly skewed to the right than that for the boys, while the distribution for the boys more closely approaches the normal. Apparently, as measured by the Washburne S-A Inventory, the girls as a group are better adjusted than the boys.

The F test for variance yields a value of 9.752, which is significant at the one per cent level. There is less than one chance in a hundred that there is no significant relationship between achievement ratio and Washburne total S-A Inventory scores.

Reference to Figure 8 indicates that this relationship is of the flat inverted bell type. The pupils who have low total scores on the Washburne S-A Inventory, indicating excellent social adjustment, and the pupils who have high total scores on the Washburne S-A Inventory, indicating that their social adjustment is very poor, both excel the group who have intermediate Washburne total scores, indicating that they have an intermediate social adjustment. The curve showing the relation of achievement

ratio to Washburne total Social-Adjustment Inventory scores begins at a high level, drops in the middle, and rises to a higher level at the opposite end. The group of pupils who have the highest total Washburne scores and consequently the poorest Washburne social adjustment excel all others in mean achievement ratio, including those pupils who show the best adjustment as measured by the Washburne S-A Inventory. It may be assumed, therefore, that high achievement ratio is associated with both excellent adjustment and poor adjustment as measured by the Washburne Social-Adjustment Inventory; but, of the two, the higher achievement ratio is more closely associated with the poor adjustment. Low achievement ratio is apparently associated with intermediate or normal adjustment as measured by the Washburne S-A Inventory. With little or no variation, this situation holds true for both boys and girls as well as for the total group of pupils studied.

Perhaps this significant relationship between Washburn S-A Inventory total scores and achievement ratio may be explained in the following way. If we assume that pupils who are not well adjusted socially as measured by the Washburne S-A Inventory do not get along well with their companions, it is quite probable that they associate and mingle less with these companions. These poorly adjusted people probably spend less time in social activities and more time on interests and tasks involving individual attention. Perhaps because of this comparative seclusion brought about by fewer social contacts with their companions, they have more time to turn their interests toward school accomplishment. As a result of this increased attention to school tasks, they are likely to have high achievement ratios.

On the other hand, using this same line of argument, it would seem that those pupils who have more social contacts and are better adjusted socially to their companions, will probably spend less time on their school work and be less interested in school accomplishment; consequently they will have lower achievement ratios. This is apparently what happens up to a certain point, but beyond that point the better a pupil is adjusted, the higher his achievement ratio becomes. This may be explained by the assumption that excellent social adjustment carries with it advantages which counterbalance relative seclusion from a social group, which is perhaps the greatest advantage of the poor adjustment group of pupils. It may be that excellently adjusted pupils, by the very reason of their increased social contacts as well as more efficient use of their time, are able to increase their achievement ratios to a point where they excel the achievement ratios of the intermediately adjusted group.

It is interesting to note the fact that the girls as a group seem to be a trifle better adjusted than the boys, as measured by the Washburne Social-Adjustment Inventory. The chief part of the difference is probably brought about by the better adjustment of the girls on such traits as truthfulness, happiness, alienation, sympathy and impulse-judgment subtest scores. The girls' scores indicate only slightly better adjustment than the boys', except in the trait of sympathy where the adjustment of the girls is definitely superior to that of the boys. For the traits of purpose and control, the boys excel the girls in adjustment.

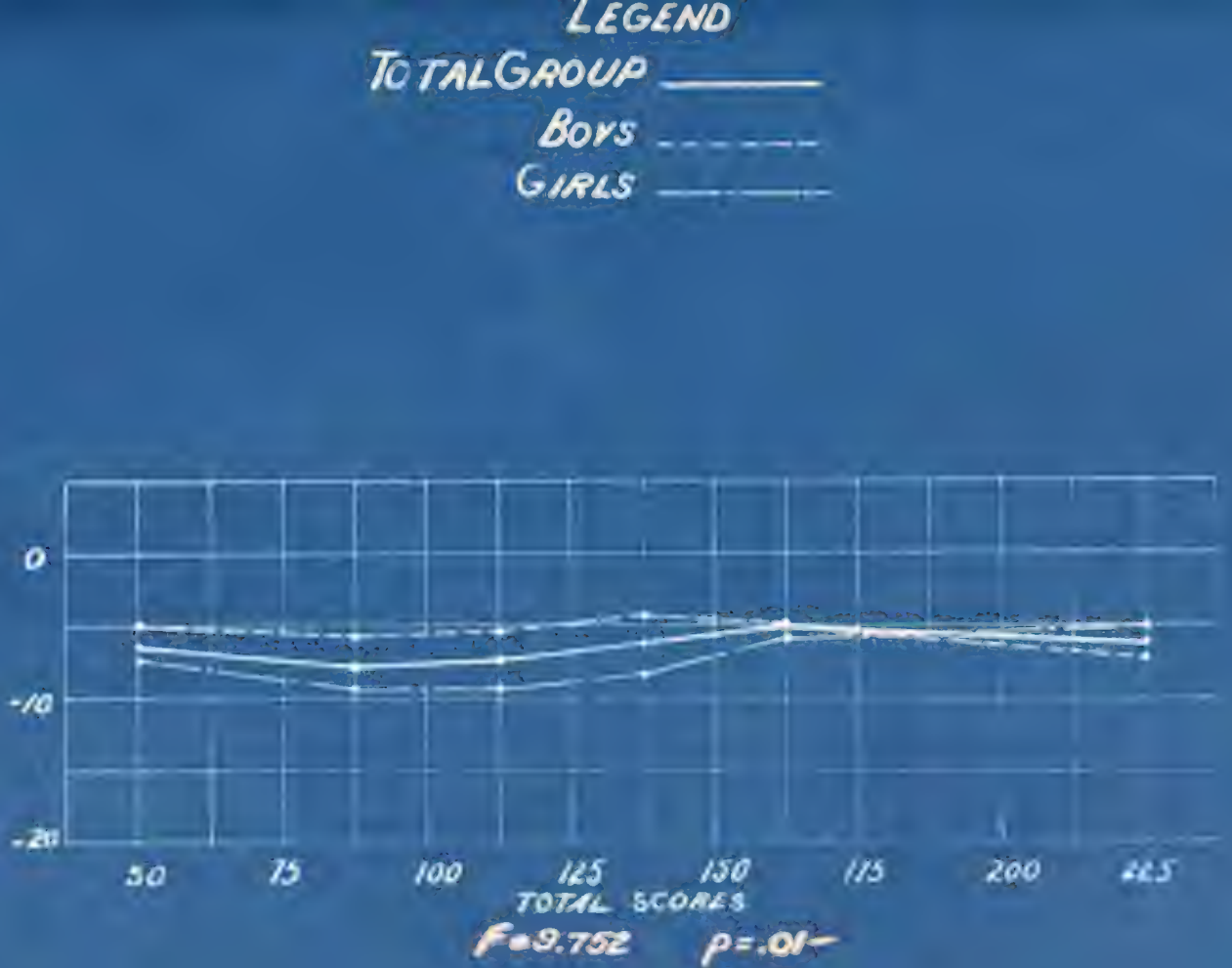
TABLE 22

Distribution showing the Relation of Achievement Ratios to Washburne Total Scores Giving the Means for Boys and Girls Separately.

WASHBURNE TOTAL SCORES

Achievement Ratio		25-74	75-99	100-24	125-49	150-74	175-274	Total
10 to 19				1		1		2
1 to 9		7	9	12	10	5	6	49
-9 to 0		17	46	36	31	13	6	149
-19 to -10		9	26	21	12	8	7	83
-29 to -20			4	5	1		1	11
-39 to -30		1		1	1			3
	N	34	85	76	[illegible]	27	20	297
	M	-6.4	-7.9	-7.6	-6	-5	-7	-7
Girls	N	22	53	39	25	10	5	154
	M	-7	-9	-10	-9	-6	-5	-9
Boys	N	12	32	37	30	17	15	143
	M	-5	-6	-6	-4	-5	-7	-5

F (total group) = [illegible] p = .01-



ACHIEVEMENT RATIOS AND
WASHBURNE TOTAL SCORES

FIG. 8

The Relation of Scores on the "Link Inventory of Activities and Interests" (Personality Quotient test) to Achievement Ratio.

The Link Inventory or personality quotient test is made up of four subtests and an overall personality score from which is obtained the personality quotient. The achievement ratios for boys, girls and total group are compared with the personality scores.

The Relation of Achievement Ratio to Social Initiative (S. I.)

The scoring on all of the tests has been arranged so that on all scales the higher scores indicate satisfactory or desirable degrees of the trait. The trait, social initiative, includes habits of taking the initiative in meeting and dealing with people. Table 23 and Figure 9 show the data collected on this variable.

Table 23 indicates that the distributions for boys, girls and total group closely approach the normal. The mean for the total group falls in the 65-70 interval and the mode in the 59-64 interval, indicating the distribution is a bit skewed to the left.

The F test for the total group yields a value of 5.923 which is significant at the one per cent level. There are more than ninety-nine out of one hundred chances that a relationship exists between achievement ratio and Link social initiative scores for these pupils of superior intelligence.

The graphic illustration in Figure 9 shows considerable fluctuation in the relationship, particularly at the ends of the curve where the cases are few in number. In general, for both boys, girls and the total group the relation between achievement ratio and social initiative is small but positive and significant. The general trend on the graphic illustration

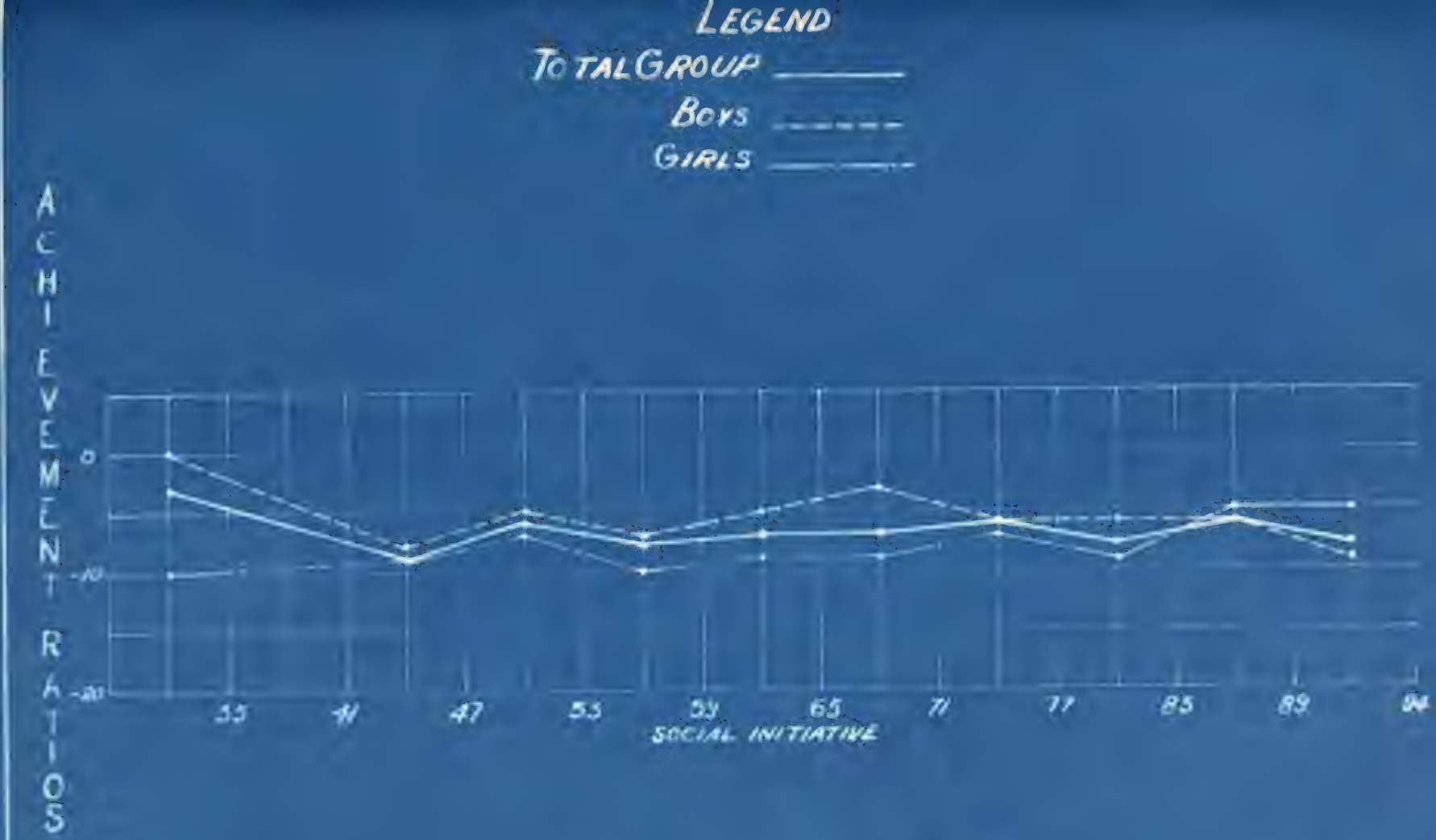
TABLE 25

Distribution Showing the Relation of Achievement Ratios to Link Inventory Social Initiative Scores Giving the Means for Boys and Girls Separately

LINK INVENTORY SOCIAL INITIATIVE SCORES

Achievement Ratio		23-40	41-46	47-52	53-58	59-64	65-70	71-76	77-82	83-88	89-94	Total
10 to 19		1				1						2
1 to 9		5		2	8	8	5	6	5	2		41
-9 to 0		6	9	5	19	20	14	26	18	10	7	134
-19 to -10		2	6	3	11	16	6	12	9	3	3	71
-29 to -20		1			6	1	1		1			10
-39 to -30							1		1			2
	N	15	15	10	44	46	27	44	34	15	10	260
	M	-3	-9	-6	-8	-7	-7	-6	-8	-6	-8	-6
Girls	N	4	9	6	21	22	18	22	19	5	3	129
	M	-10	-9	-7	-10	-9	-9	-7	-9	-5	-5	-9
Boys	N	11	6	4	23	24	9	22	15	10	7	131
	M	0	-8	-5	-7	-5	-3	-6	-6	-6	-9	-6

F (total group) = 5.923; p = .01-



ACHIEVEMENT RATIOS AND

FIG. 9 LINK INVENTORY SOCIAL INITIATIVE SCORES

indicates that high or good social initiative scores are associated with high achievement ratios.

It would appear, then, that habits of taking the initiative in meeting and dealing with people are positively associated with achievement ratio. Possibly possession of social initiative helps the superior pupil to meet and become acquainted with his teachers and others who may be able to help him with school work and consequently help to increase his achievement ratio. Social initiative in the classroom may get more attention for the superior pupil and so help to increase his achievement ratio. Some such condition as those listed above will account for the positive relation found between achievement ratio and social initiative.

The Relation of Achievement Ratio to Self-determination (S. D.).

According to Link, the scale for this trait consists of items representing habits of doing things which are considered desirable even though they may be unpleasant. An example would be making friendly advances to people you dislike, or studying your lessons when you would rather go to the movies.

Table 24 and Figure 10 contain and illustrate the data collected on this variable for the pupils of superior intelligence who were studied.

Reference to the frequency distribution in Table 24 shows that cases are pretty well spread out in a distribution closely approaching the normal. The mode and mean for the distribution for the total group occurs at the 56 to 60 interval, which is the mid interval for this distribution.

The P test for the total group gives a value of 2.994 which is significant at the one per cent level; accordingly, there is a significant

relationship existing between achievement ratio and the Link Inventory self-determination scores for these pupils of superior intelligence.

The graph in Figure 10 for the total group shows considerable fluctuation, but the relationship is evidently negative but small. High scores on the self-determination subtest of the Link Inventory, indicating excellent adjustment, are positively associated with low achievement ratios for the total group; but, as one can see from observation of Figure 10, this association is of small degree. It is also true that a pupil who is poorly adjusted as measured by the self-determination subtest is more likely to have a high achievement ratio than a low one. There is considerable fluctuation in the graphic relationship for the total group, but even more fluctuation is in evidence for the graphic relationship for the boys and girls. Both the curves for the boys and for the girls show a slight negative association between achievement ratio and self-determination scores. The relationship in both cases is very small and possibly would disappear with a larger sample. At any rate, even though the relationship is significant, it is of very small degree.

It seems evident to the writer that several other factors must be operating to effect the achievement ratio which are considerably more important than the factor of self-determination. Fluctuation in the graphic relationships and the fact that the relationship is of very small degree between achievement ratio and self-determination seems to bear out this point.

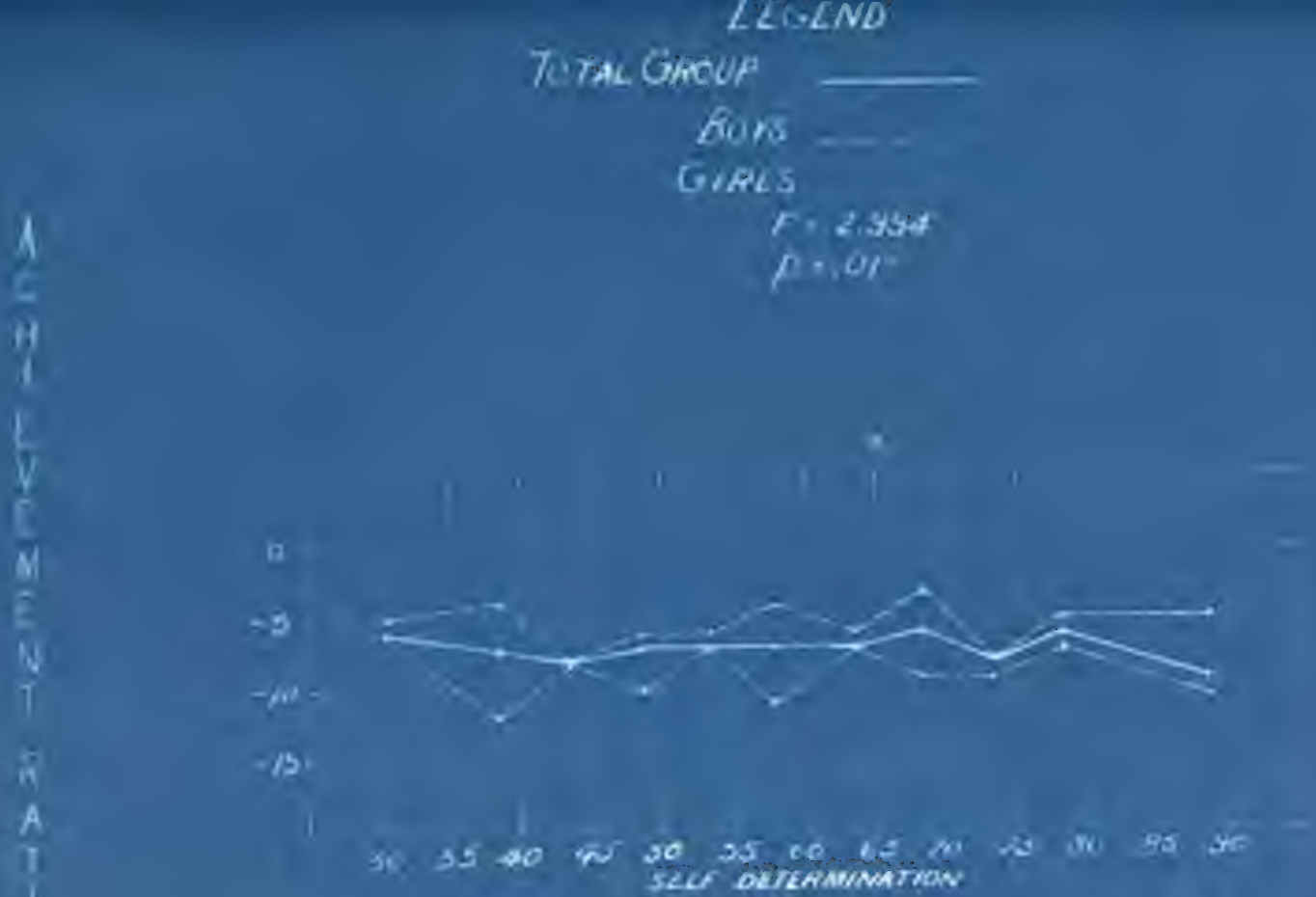
It is a little difficult to account for the fact that a significant negative relationship exists between self-determination and achievement

TABLE 24

Distribution Showing the Relation of Achievement Ratios to Link Inventory Social Determination Scores Giving the Means for Boys and Girls Separately.

ievement Ratio	25-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	81-95	Totals
to 19				1				1				2
to 9	4	5	5	5	2	9	5	7	4	6	2	49
to 0	9	7	13	10	18	18	18	19	20	12	5	149
to -10	5	3	7	9	7	11	5	13	6	7	7	83
to -20			1	2		2	3	1	2			11
to -30		1				1			1			3
N	18	14	25	27	27	41	31	41	35	24	14	297
M	-6	-7	-8	-7	-7	-7	-7	-6	-8	-6	-9	-7
ls N	7	6	15	10	18	19	17	25	15	12	10	154
M	-6	-12	-8	-10	-7	-11	-7	-9	-9	-7	-10	-9
s N	11	8	10	17	9	22	14	16	20	12	4	143
M	-5	-4	-7	-6	-6	-4	-6	-3	-8	-6	-5	-5

F (Total Group) = 2.99; p = .01



ACHIEVEMENT RATIOS AND

LINA INVENTORY SELF DETERMINATION SCORES

ratios. This significant relationship, although small, may be due to several possible causes. High achievement ratios may have a tendency to cause low self-determination scores, or low self-determination scores may be causing the high achievement ratios, or both may be caused by the third factor operating to control both.

The Relation of Achievement Ratio to Economic Self-Determination

This scale on the Link Inventory measures the ability to earn one's own living in relation to personal adjustment. "The items of this scale consist of habits of earning money by chores, selling tickets or magazines, making trades, etc. In other words, samples of the disciplines and service required for economic ends or work success."[154]

Table 25 and Figure 11 contain and illustrate the data collected on this variable.

Reference to the frequency distribution indicates that the economic self-determination scores fall in a rather regular normal distribution. The mode falls at the 30 to 32 interval, which is the mid interval for the distribution.

The F test gives a value of 5.326 which is significant at the one per cent level. There is evidently a significant relationship existing between economic self-determination scores and achievement ratios for the superior pupils studied.

Observation of the graphic relationship for the total group in Figure 11 shows that this relationship is negative but small. The 3

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154 Link, Henry C. and others. Manual for the P.Q. or Personality Quotient Test. (Inventory of Activities and Interests) 1933 Revision. Psychological Corporation, New York, 1933, p. 2.

groups of pupils having the highest mean achievement ratios fall at 3 widely separated intervals in the curve. The first group of pupils have very low E. S. D. scores, indicating poor adjustment for this trait. The second group of pupils, having comparatively high mean achievement ratio, falls in the middle of the curve for the total group, showing average adjustment on E. S. D. The third group of high achievement ratio pupils falls near the upper end of the E. S. D. curve, indicating good adjustment for E. S. D. General inspection of the curve for the total group reveals considerable fluctuation, particularly at the ends of the distribution where the number of cases is small. If the ends of the distribution of achievement ratios were to be removed, the distribution would be of the flat bell-shaped curve type.

When the distributions for the boys and girls are compared, it is observed that both are characterized by considerable fluctuation. The boys who have the highest mean achievement ratios fall at the middle of the curve. The graphic illustration of the relationship between the achievement ratios for the girls and E. S. D. scores shows considerably less fluctuation than that for either the boys or the total group. The girls with the lowest achievement ratios have definitely the highest E. S. D. scores, while the girls with the highest achievement ratios have the lowest E. S. D. scores. The negative relationship between E. S. D. and achievement ratio is consequently more marked for the girls than it is for either the boys or the total group.

This small significant negative relationship which exists between E. S. D. and achievement ratio may be accounted for in several ways. Pupils who are economically self-reliant or who rank high in ability to take care of themselves economically while attending school are more likely to be spending a considerable part of their time at certain

after school jobs which will reduce the amount of time they can spend on their studies; consequently, their achievement in school will not come as close to their capacity as might otherwise be expected. The degree of the relationship is small and, in the opinion of the writer, merely presents evidence that no positive relationship exists between the achievement ratio of pupils of superior intelligence and what Link calls economic self-determination. This finding seems to be in agreement with the findings of others in regard to matters of vocational choice and related variables.

It may be, too, that the association of low achievement ratios with good adjustment, as far as economic self-determination is concerned, may result from other factors influencing this relationship. High rating for E.S.D. may be associated with need or intention to leave school early. This in turn may influence the achievement ratio to some considerable degree. Other factors may influence the relationship indirectly in just such a manner.

The Relation of Achievement Ratio to Adjustment to the Opposite Sex (S. X.)

This scale assumes that proper sex adjustment depends upon habits of action formed early in life toward members of the opposite sex. It includes such items as going to mixed parties, learning how to dance.

Table 26 and Figure 12 contain and illustrate the data collected on this variable. Table 26 shows the distribution of adjustment to the opposite sex scores for the total group to be slightly skewed to the left. The greater number of scores tend to fall in the upper half of the distribution, indicating that the greater number of these pupils of superior intelligence are well adjusted toward the opposite sex,

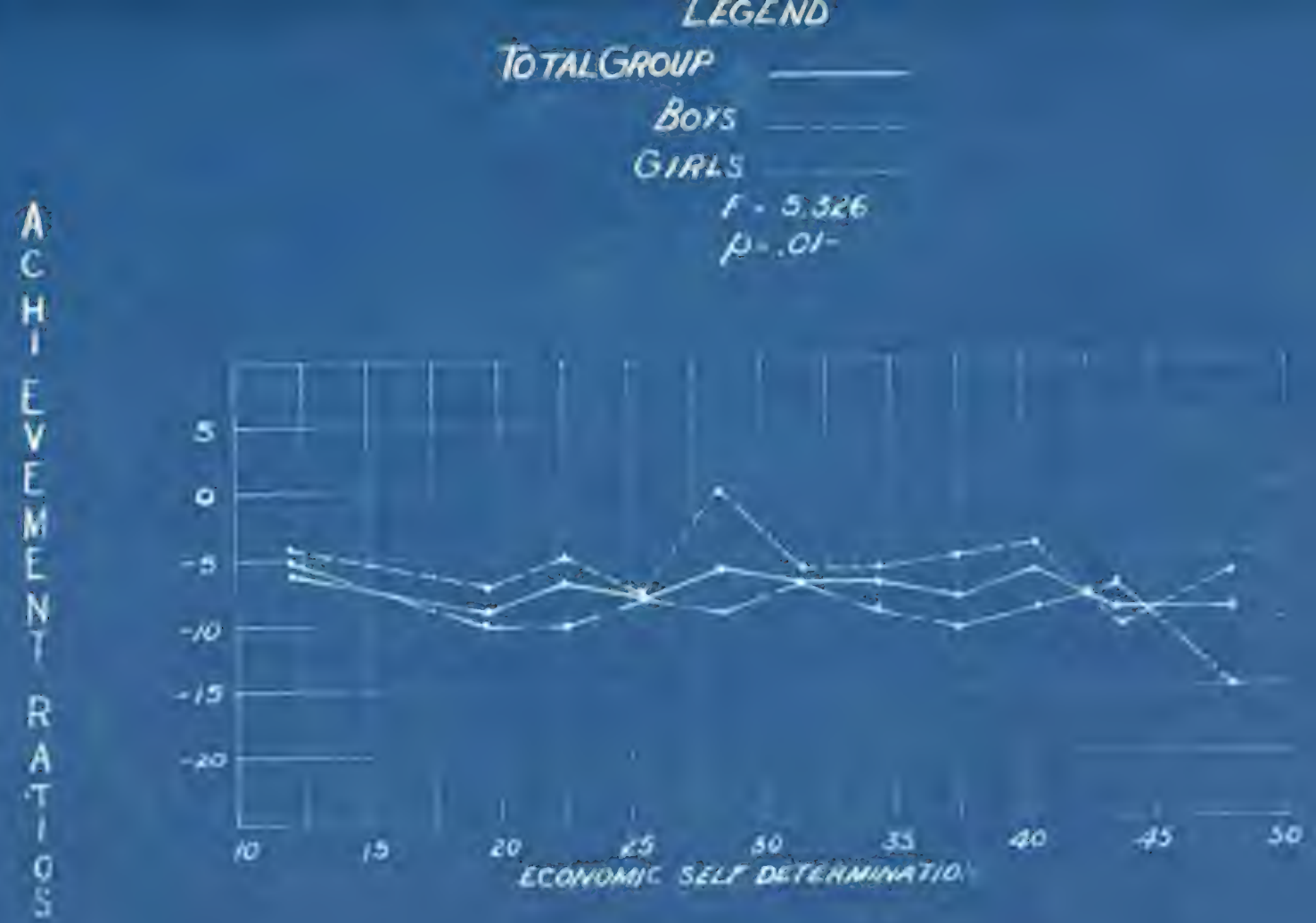
TABLE 25

Distribution Showing the Relation of Achievement Ratios to Link Inventory Economic Self Determination Scores Giving the Means for Boys and Girls Separately

LINK INVENTORY ECONOMIC SELF DETERMINATION SCORES

ievement Ratio		6-17	18-20	21-23	24-26	27-29	30-32	33-35	36-38	39-41	42-44	45-50	Total
to 19		1					1						2
o 9		1	1	6	6	6	9	5	9	4		2	49
to 0		5	8	8	9	16	27	21	20	19	10	6	149
to -10		2	4	4	7	6	14	10	18	7	5	6	83
to -20		1	1	1	3	1	1	1			1	1	11
to -30				1			1		1				3
	N	10	14	20	25	29	53	37	48	30	16	15	297
	M	-6	-9	-7	-8	-6	-7	-7	-7	-6	-9	-9	-7
ls	N	2	8	8	14	19	32	22	25	14	5	5	154
	M	-5	-10	-10	-8	-9	-7	-9	-10	-9	-7	-15	-9
s	N	8	6	12	11	10	21	15	23	16	11	10	143
	M	-4	-7	-5	-8	0	-6	-6	-5	-4	-10	-6	-6

F (total group) = 5.326; p = .01-



ACHIEVEMENT RATIOS AND

FIG. 11 LINA INVENTORY ECONOMIC SELF DETERMINATION SCORES

evidently more so than any of the other three traits measured by the Link Inventory of Activities and Interests. The mode for the distribution falls at the 32 to 34 interval, which is quite definitely in the upper half of the distribution. The distributions for the boys and girls are skewed definitely to the left, where adjustment to the opposite sex scores are concerned.

Perhaps it should be noted that, of the 41 cases in the total group showing the best adjustment for opposite sex, all of them are girls. It seems evident that it is due very greatly to the influence of the girls that this superior group of pupils possesses better than average adjustment to the opposite sex.

When the F test is applied to the distribution, a result of 13.652 is obtained. This is significant at the one per cent level and indicates that there is a significant relationship existing between adjustment to the opposite sex and achievement ratio for the total group of pupils of superior intelligence.

Reference to Figure 12 shows that the relationship is definitely negative. Pupils having high achievement ratios are likely to have low scores on this subtest, indicating poor adjustment to the opposite sex; and pupils having low achievement ratios are likely to have high scores on this subtest, indicating good adjustment to the opposite sex. This relationship holds for both boys and girls as well as for the total group.

There is some fluctuation in the negative relationship which seems to exist between achievement ratio and adjustment to the opposite sex scores, and this fluctuation increases when the boys or girls are considered separately.

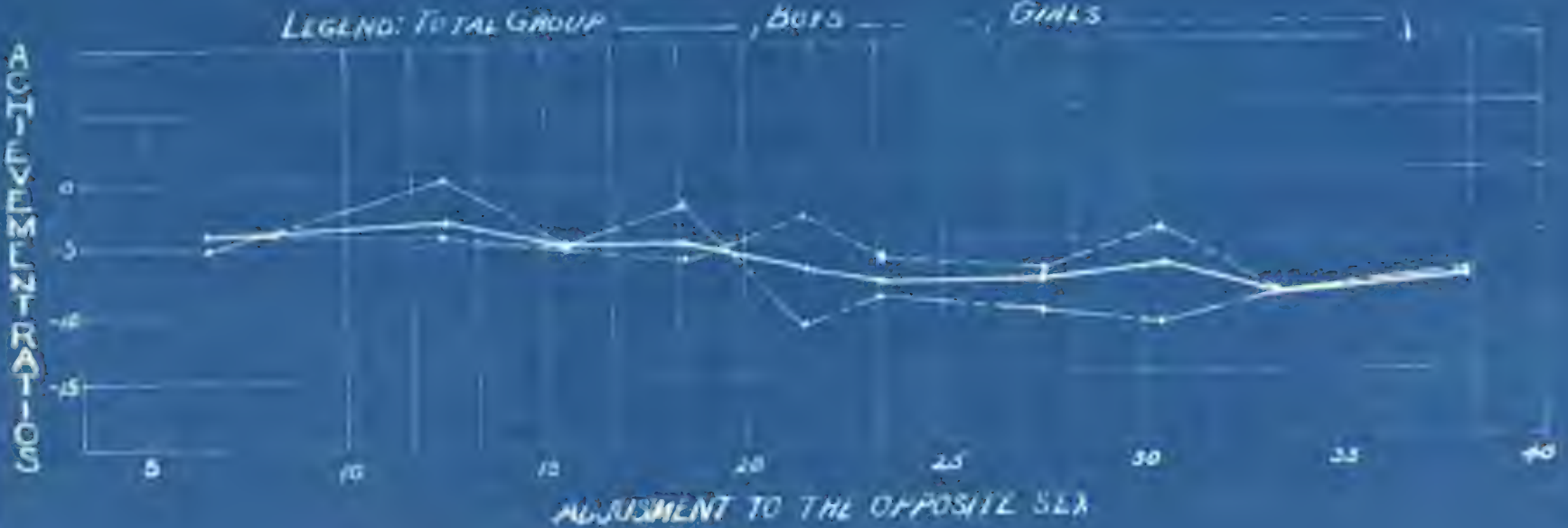
TABLE 26

Distribution Showing the Relation of Achievement Ratios to Link Inventory Adjustment to the Opposite Sex Scores Giving the Means for Boys and Girls Separately.

LINK INVENTORY ADJUSTMENT TO THE OPPOSITE SEX SCORES

hievement Ratio		2-10	11-13	14-16	17-19	20-22	23-25	26-28	29-31	32-34	35-40	Totals
0 to 19		1				1						2
to 9		3	6	7	6	4	3	5	7	5	3	49
9 to 0		9	3	10	11	16	16	16	18	23	27	149
19 to -10		2	2	4	4	8	5	16	12	21	8	83
29 to -20		1	1	1	1		2	1	2	1	1	11
39 to -30						1					2	3
	N	16	12	22	22	30	27	38	39	50	41	297
	M	-4	-3	-5	-5	-7	-8	-8	-7	-9	-8	-7
irls	N	3	2	4	5	13	13	19	20	33	41	154
	M	-5	.	-5	-2	-11	-9	-10	-11	-9	-8	-9
oys	N	13	10	18	16	17	14	19	19	17		143
	M	-4	-4	-5	-6	-3	-6	-7	-4	-9		-5

F (total group) = 13.252; p = .01-



ACHIEVEMENT RATIOS AND LINA INVENTORY ADJUSTMENT TO THE OPPOSITE SEX SCORES

$F = 13.432$

$p < .01$

FIG. 12

The negative association between achievement ratio and adjustment to the opposite sex, which holds for the boys, girls, and total group, may be accounted for in a number of ways. The pupils who acquire, probably through a number of personal contacts with the opposite sex, an excellent adjustment to the opposite sex probably spend less time and are less interested in school work. Consequently, they achieve considerably below what might be expected of pupils of their intelligence.

The fact that the girls are so much better adjusted to the opposite sex than the boys might in a large measure account for the fact that the mean achievement ratio for the girls is considerably lower than the mean achievement ratio for the boys. On the other hand, pupils who do not do so well in school or whose adjustment comes further from their promise than might ordinarily be expected, may turn to the opposite sex for an outlet for their energies.

The Relation of Achievement Ratio to Personality Quotient

This scale includes all the items of the inventory. As Link[155] explains, "the possession of habits which interest and serve other people." Personality quotient may be interpreted as the intelligence quotient, a score of 100 being average. On this test, 150 pupils received P. Q.'s of less than 98, while 103 pupils received P. Q.'s of over 105. The mode for this particular test fell at the 98 to 105 interval, where there are 55 cases. Judging from these results, it appears that this superior group of pupils had just average personality quotients.

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155 Ibid. p. 3.

Table 27 and Figure 13 contain and illustrate the data on personality quotient. The distribution appears to be very close to normal. It is interesting to note, however, that 84 cases, including 24 girls and 30 boys, have definitely low Link personality quotients, but this is counterbalanced by 87 cases, 35 girls and 24 boys, who have definitely superior personality quotients. The distribution of P. Q.'s for the boys and girls closely approaches normal distributions, but the distribution for the boys is skewed a bit more to the right with a lower mean P. Q. than that for the girls.

When the F test is applied to the total distribution, a value of 8.941 is secured, which is significant at the one per cent level. A significant relationship exists between personality quotient and achievement ratio. Observation of the graphic relationship in Figure 12 indicates that this relationship is negative, but to a small degree. When the group as a whole is studied, it is observed that the mean achievement ratio for the 55 cases having average P. Q.'s (88 to 105) is lower than that for any other category selected. This is true for the girls, and with one exception true for the boys. It would seem that average personality quotient is associated with low achievement ratio, that low personality quotients are associated with high achievement ratio, and that high personality quotients are associated, too, with high achievement ratio. This is true for boys girls and total group with little exception.

The negative relationship which exists between achievement ratio and personality quotient may be accounted for in a number of ways. First, although the relationship is significant, it is evidently very

small. To the writer, this is more of an indication that a positive relationship between personality quotient and achievement ratio does not exist than it is an indication that a negative relationship between achievement ratio and personality quotient does exist.

The association of low personality quotient with high achievement ratio, although small, may be due again to a time factor. Pupils having more outside interests and tending to spend more time in social activities and cultivating friends are more likely to spend less time on their school work and, consequently, achieve less than might be expected of them. Perhaps this is more particularly true of the girls than it is of the boys. It is likely that the girls are more interested in social contacts likely to develop their personality than they are in books; this is probably true of boys to a lesser extent.

This is probably true up to a certain point, but the association of average personality quotients with lowest achievement ratios introduces a complication. Probably the same thing is indicated here as is indicated by the Washburne S-A Inventory scores.

Better adjusted pupils spend less time on school work, and their achievement ratios suffer. Poorly adjusted pupils with low P. Q.'s have fewer social contacts and more time for school achievement. The best adjusted pupil having an intermediate achievement ratio probably has arrived at a happy medium and so attains an intermediate achievement ratio

TABLE 27

Distribution Showing the Relation of Achievement Ratios to Link Personality Quotients Giving the Means for Boys and Girls Separately

LINK PERSONALITY QUOTIENTS

Achievement Ratio		50-73	74-81	82-89	90-97	98-105	106-113	114-121	122-137	Total
10 to 19		1				1				2
1 to 9		4	6	10	9	8	6	4	2	49
-9 to 0		13	14	15	27	20	27	17	16	149
-19 to -10		5	10	12	10	19	12	5	12	83
-29 to -20		1	1		3	6				11
-39 to -30		1				1		1		3
	N	25	31	37	49	55	45	27	30	297
	M	-6	-7	-6	-6	-9	-6	-6	-8	-7
Girls	N	8	16	18	19	33	27	14	19	154
	M	-10	-8	-7	-8	-11	-7	-9	-8	-9
Boys	N	15	15	19	30	22	18	13	11	143
	M	-5	-6	-4	-5	-6	-5	-3	-10	-5

F (total group) = 8.941; P = .01-

ACHIEVEMENT RATIOS AND
LINK PERSONALITY QUOTIENTS

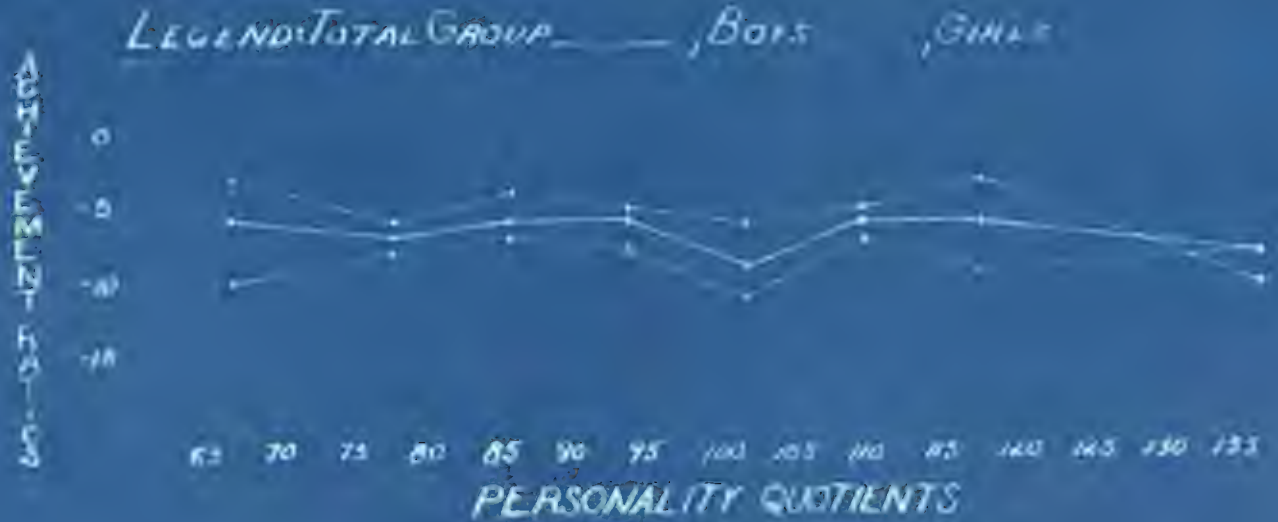
LEGEND: TOTAL GROUP ____ , BOYS ____ , GIRLS ____
ACHIEVEMENT RATIOS
0
-5
-10
-15
60 70 75 80 85 90 95 100 105 110 115 120 125 130 135
PERSONALITY QUOTIENTS

FIG. 13

F = 8.540
P = .01

Personality Summary

The general trend of the relationship between achievement ratio and personality, as measured by both the Washburne Social-Adjustment Inventory and the Link Inventory of Activities and Interests, is the same. It appears that the findings obtained from the results of both personality tests are in general agreement.

The Link Personality Quotient, which is merely a summary of the various subtest scores, and the Washburne total scores, which is a summary of the Washburne subtest scores, show the same relationship with the achievement ratios of the pupils studied. In both cases, poorest personality adjustment is associated with highest achievement ratio, intermediate personality adjustment is associated with lowest mean achievement ratio, and highest personality adjustment is associated with intermediate mean achievement ratios. It seems quite evident that the relationship which exists between achievement ratio and personality is not a positive relationship, but that it tends to be negative. Apparently, however, that large group of pupils who have normal personality adjustment also have something which reduces their achievement ratio.

The results found here are not in agreement with those reported by Traxler[156] that pupils with high P. Q.'s have a slight advantage in academic competition. According to the results given above, pupils with high P. Q.'s have a slight advantage in [illegible]

156 Traxler, A.E. "Current Construction and Evaluation of Personality and Character Tests". Review of Educational Research, February, 1941, p. 60.

competition over those pupils who have average P.Q.'s, but the pupils who have low P. Q.'s have an advantage over both the pupils who have average and over those who have high personality quotients, as far as academic competition measured by achievement ratio is concerned.

It must be remembered that personality tests unfortunately do not always measure accurately a pupil's temperament and, as a result, such faulty measures compared to achievement ratio may bring inconclusive results.

Stagner[157] writes in general agreement:

> 1. Linear correlations of intelligence, achievement, and personality measures are low and are probably so as a result of the inherent nature of the relationship.
>
> 2. Extreme personality trends seem to counterbalance advantages in aptitude, making for equal achievement in opposed groups. High emotionality and high self-sufficiency lead to lower achievement than would be predicted from intelligence scores.

It is quite possible that even if there were a positive relationship existing between personality and achievement ratio; poor personality might not cause poor achievement ratio, but that the reverse may be true. Failure to work consistently up to one's capacity may demoralize the personality.

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157 Stagner, Ross, op. cit., p. 449

CHAPTER VI

THE RELATION OF HOME BACKGROUNDS TO ACHIEVEMENT RATIO

A. Sims Socio Economic Status

B. Foreign Languages Spoken in the Home

C. Number of American Born Grandparents

D. Antecedent's Country of Birth

E. Father's Education

F. Mother's Education

G. Number of Siblings in the Family

H. Sibling's Position in the Family

I. Environment - Rural or Urban

J. Family Residence - Broken or Intact Family

K. Pupils Health I & II

L. Parents Health

M. Pupil's Physical Defects

N. Home Discipline

O. Parent's Working

P. Study Habits

CHAPTER VI

THE RELATION OF SOME VARIABLES TO ACHIEVEMENT RATIO

The Relation of Achievement Ratio to Sims Socio-Economic Status

The Sims Score Card for Socio-Economic Status was developed to provide a simple, convenient, and objective device for determining the cultural, social, and economic backgrounds furnished by the homes of school children. It consists of 25 questions ranging from whether there is a telephone in the home to what the pupil's father's occupation is. The scores on this test were arranged into 10 socio-economic status classes set up by Sims, class 1 being very inferior, class 10 being extremely superior. Cases in this study were classified accordingly.

Socio-Economic Class	Boys	Girls	Total
0-Indeterminately Low			
1-Lowest	-	-	-
2-Very Low	-	-	-
3-Low	-	1	1
4-Medium Low	3	-	3
5-Medium	16	22	38
6-Medium High	35	35	70
7-High	66	58	124
8-Very High	18	32	50
9-Highest	5	6	11
10-Indeterminately High	-	-	-
TOTALS	143	154	297

As can be seen from the above frequency distribution of Sims Socio-Economic scores by classes, the very great majority of cases fall in medium to highest socio-economic status classes. This group

of pupils of superior intelligence are definitely above average in socio-economic status.

Table 28 and Figure 14 give the data collected on the relationship of this variable S. E. S. to achievement ratio. The F test yields a value of 6.132 which is significant at the one per cent level. A relationship that is significant exists between achievement ratio and socio-economic status for these pupils of superior intelligence. Figure 14 indicates that this relationship for the total group is linear and positive. Evidently a high achievement ratio is associated with a high socio-economic status score for pupils of superior intelligence.

With the exception of slight fluctuations at the end of the curve, this significant positive linear relationship between achievement ratio and socio-economic status appears to exist for both boys and girls as well as the total group. The boys at the lower end of the S. E. S. distribution do not have the very lowest achievement ratios for the boys, and the girls at the upper end of the S. E. S. distribution do not have the very highest achievement ratios for the girls; with these two exceptions, however, the A. R. - S. E. S. curve is uniform, indicating a definite significant positive linear relationship between achievement ratio and socio-economic status for boys, girls, and the total group.

Previous investigators, Desing[158], Eckert and Mills[159], Conklin[160] are agreed there is little difference between the home setting or socio-

158 Desing, Minerva F., op. cit. pp. 18-19.
159 Eckert, Ruth E. and Mills, Henry C., "Variations Among High School Seniors in Promise and Performance Measures". School Review. 44:274-282.
160 Conklin, Agnes, op. cit. p. 114.

economic status for successful and unsuccessful pupils of superior intelligence. The findings given here are in direct disagreement on this point.

This relationship between achievement ratio and S.E.S. may be accounted for in a number of ways. In general, a better social and economic status possibly carried with it advantages which help the pupil to make a higher achievement ratio. Such things as possession of more books in the home for reference, more rooms in the house allowing more privacy for study, better educated parents, may all aid the pupil in making a higher achievement ratio. Apparently boys of low socio-economic status have less trouble than girls in overcoming this disadvantage and, consequently make better achievement ratios. Apparently, too, a very high achievement ratio is a disadvantage for girls, but not for boys. Girls of high socio-economic status possibly have relatively more outside interests so that their school work suffers and their achievement ratio falls.

On the other hand, high achievement ratios on the part of students may result in pupils and homes in general having a higher socio-economic status--except in the two cases already mentioned. Some third factor or outside group of factors may be operating to influence both achievement ratio and socio-economic status. Any or all of these things may be acting to bring about the positive significant relationship found between achievement ratio and socio-economic status.

The Relation of Achievement Ratio to Foreign Languages Spoken in the Home

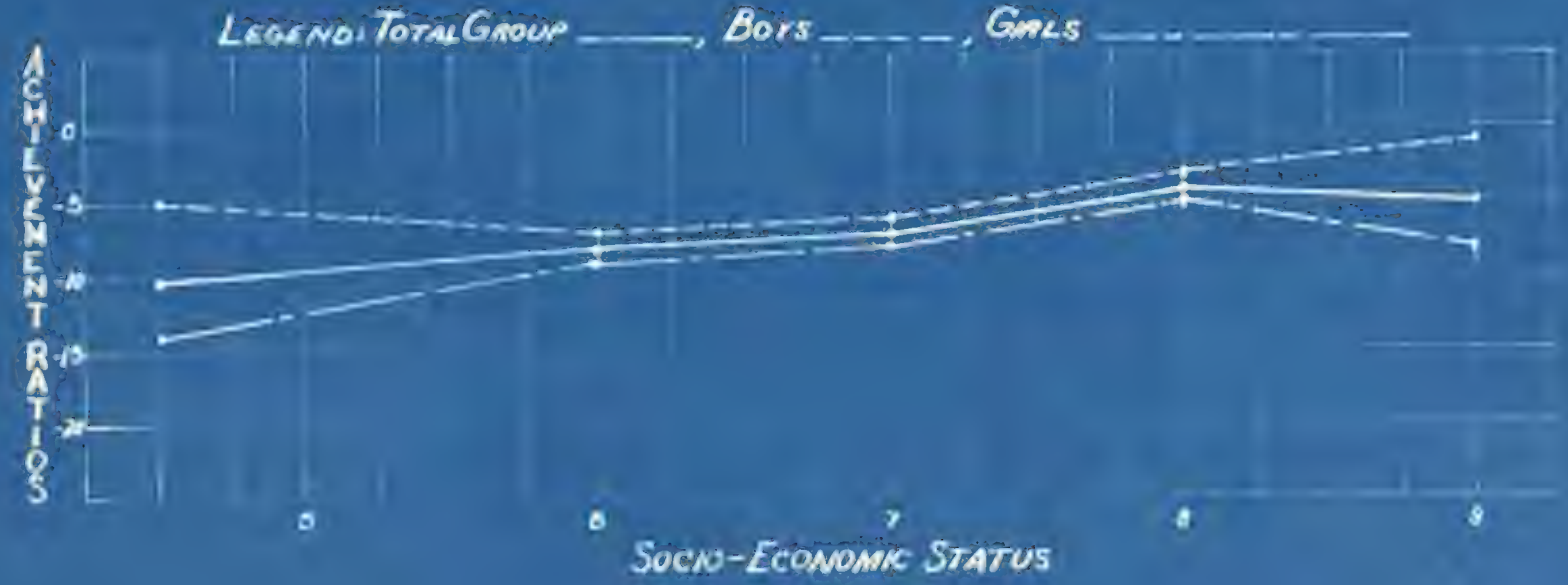
Every pupil included in the study was asked to list the number of languages, including English, spoken in his home. It is interesting to note that 12 different foreign languages are spoken in the homes of 297 pupils of superior intelligence who are included

TABLE 28

Distribution Showing the Relation of Achievement Ratios to Sims Socio-Economic Status Classes Giving the Means for Boys and Girls Separately.

	SIMS SOCIO-ECONOMIC STATUS CLASSES					
Achievement Ratio	3-5	6	7	8	9	Total
10 to 19	1			1		2
1 to 9	4	11	24	9	4	49
-9 to 0	15	35	62	34	3	149
-19 to -10	19	23	33	4	4	83
-29 to -20	2	4	3	2		11
-39 to -30	1		2			3
N	42	70	124	50	11	297
M	-10	-8	-7	-4	-5	-7
Girls N	23	35	58	32	6	154
M	-14	-9	-8	-5	-8	-9
Boys N	19	35	66	18	5	143
M	-5	-7	-6	-3	-1	-6

F (total group) = 16.132; P = .01-



ACHIEVEMENT RATIOS AND

SIMS SOCIO-ECONOMIC STATUS CLASSES

F = 16.15

p < .01

FIG. 14

in the study. 114 of the pupils live in homes in which only English is spoken.

As can be seen by referring to the Frequency Table 38, German and Jewish are the two foreign languages most frequently spoken. In 16 homes Lithuanian, French, Polish, Russian, Hungarian, Greek, Armenian or Spanish are spoken.

The distribution, of course, is highly skewed to the right because of the size of the category of no foreign language spoken. This is true for boys, girls and the total group. The T test yields a value of 18.367 between the pupils in those homes foreign languages are spoken and those pupils in whose homes no foreign languages are spoken. This is significant at the one per cent level.

A relationship exists between achievement ratio and foreign languages spoken in the home. Figure 15 shows graphically for the total group how the achievement ratio for all three categories of pupils in whose homes foreign languages are spoken excels in mean achievement ratio the pupils in whose homes no foreign languages are spoken. In other words, where the total group is concerned, high achievement ratio is associated with foreign languages spoken in the home.

When the achievement ratios for the groups who live in homes in which a foreign language is spoken are ranked according to various languages, it is noticed that the miscellaneous group of 16 cases has the highest average achievement ratio; the Jewish group of 81 cases has the next highest average achievement ratio; the German group of 17 cases ranks third in average achievement ratio; and the group of 214 cases in which no foreign language is spoken in the home ranks

last in mean achievement ratio.

This same situation is true with very little variation for the boys, the only difference being that the mean achievement ratios by rank are as follows: (1) Miscellaneous, (2) German, (3) Jewish, (4) no foreign language.

Figure 15 shows that the mean achievement ratios for the girls varies from both boys and the total group. In the case of the girls, there is a difference in the ranking by mean achievement ratios. The girls in whose homes no foreign languages are spoken excel those girls in whose homes both German and Jewish are spoken, but they in turn are excelled by the miscellaneous group in mean achievement ratio. Evidently, the significant relationship which exists between achievement ratio and the presence or absence of foreign languages spoken in the home is due largely to the influence of the boys.

If a foreign language is spoken in the home, it is fairly good evidence that some members of the family have not been in America their entire lifetime, certainly not long enough to forget how to speak their native tongues. It may be that in some cases the fact that the foreign languages are spoken in the home is an evidence of superior education and knowledge of languages not native to the family, but this is probably the exception rather than the rule.

If, then, we assume that the fact that foreign languages are spoken in the home is an adequate criterion that people in the homes have been immigrants not too long ago, how can we account for the fact that pupils coming from homes in which foreign languages are spoken have a higher mean achievement ratio than "native" pupils? That is the dif-

TABLE 29

Distribution of Achievement Ratios According to Foreign Languages Spoken in Home Giving the Means for Boys and Girls Separately.

FOREIGN LANGUAGE SPOKEN IN HOME

Achievement Ratio		None	German	Jewish	Miscellaneous	Total
10 to 19				1	1	2
1 to 9		30	4	13	2	49
-9 to 0		107	12	24	6	149
-19 to -10		64	2	17		83
-29 to -20		11				11
-39 to -30		2	1			3
	N	214	19	55	9	297
	M	-8	-6	-5	-2	-7
Girls	N	130	11	9	4	154
	M	-9	-11	-9	-5	-9
Boys	N	84	44	10	5	143
	M	-7	-4	-3	-1	-5

F (total group) = 15.267; p = .01-

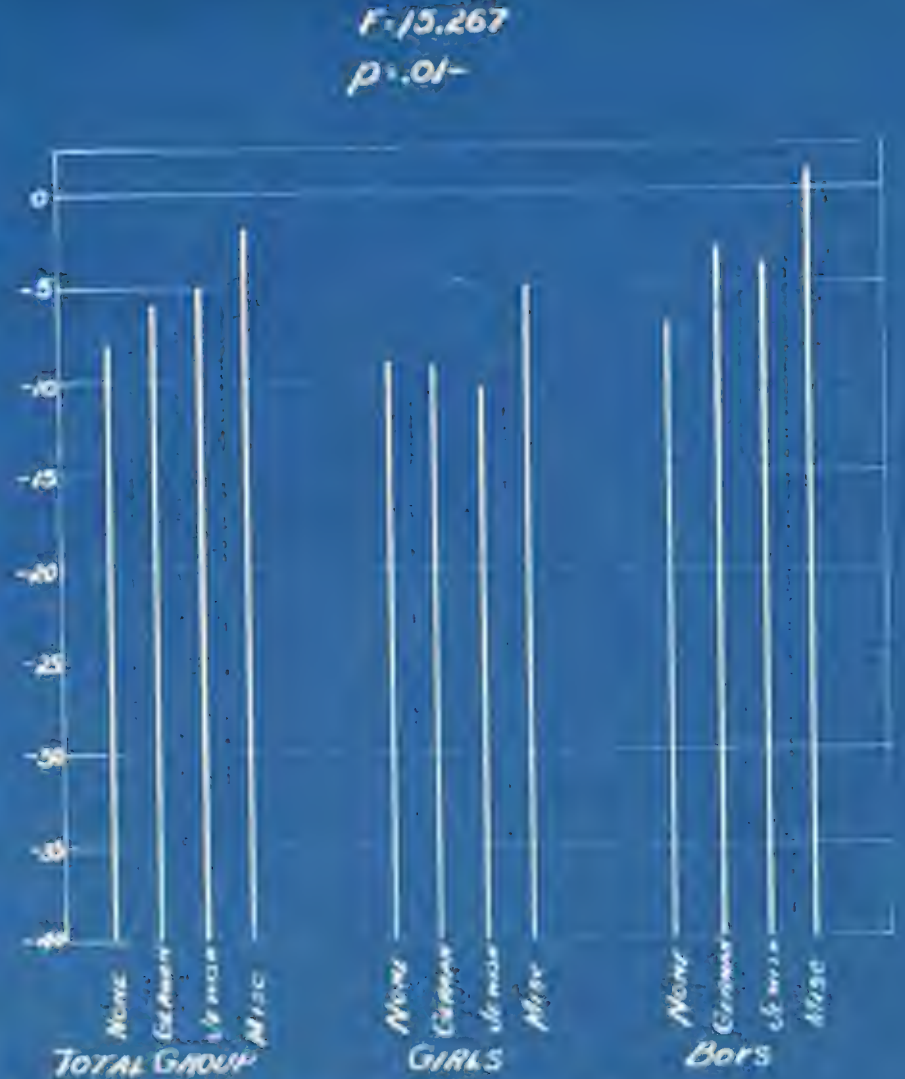


FIG. 15 ACHIEVEMENT RATIOS AND FOREIGN LANGUAGES SPOKEN IN THE HOME

ACHIEVEMENT RATIOS AND NUMBER OF AMERICAN BORN GRANDPARENTS

FIG. 16

ference between the boys and girls which accounts for the lower mean achievement ratio for the girls who come from homes in which foreign languages are spoken? Perhaps the boys from foreign language-speaking families feel that they have a handicap and work harder to overcome it. The boys come in greater contact with the outside American world and possibly are more influenced by it than girls may be. These are possible explanations for the differences found.

It was interesting to note here that of the many people of Polish and Russian descent, only 9 lived in homes where Polish or Russian was spoken, while in the comparatively smaller group of children having German antecedents, 20 lived in homes where German was spoken. It would seem that the Russians and Poles are much more easily assimilated into our American way of life than are the Germans, if a foreign language spoken in the home can be used as a criterion.

This might be explained by the fact that the Russians or Poles, instead of speaking Russian or Polish, may be numbered among those 51 cases in whose homes Jewish is spoken.

The Relation of Achievement Ratio to the Number of American Born Grandparents.

Every pupil in the study was asked to find out and list the country of birth for each of his four grandparents. The number of American born grandparents belonging to any one pupil was selected as one variable to be compared with the achievement ratio.

Reference to Table 30, giving distribution of achievement ratios according to the number of American born grandparents, shows that the great majority of the pupils in this study have all four grandparents born in America. Consequently, the distribution is nearly skewed

to the right, although the category in which the next highest group of pupils falls is that group who had no American born grandparents. In the case of 24 pupils, they were not sure where all their grandparents were born.

The F test was applied to this relationship, and a value of 11.014 was obtained. This was significant at the one per cent level, indicating that the relationship between achievement ratio and the number of American born grandparents is highly significant.

Reference to the graph in Figure 10 shows that the smaller the number of American born grandparents a pupil may have, the higher his achievement ratio is likely to be. This relationship fluctuates quite a bit, but the general trend is unmistakable. The 30 pupils who have no American born grandparents are slightly excelled in mean achievement ratio by the 6 pupils who have one American born grandparent, but they excel in mean achievement ratio the 3 other groups of pupils who have 2, 3, and 4 American born grandparents. The 17 pupils who have 3 American born grandparents excelled the pupils who have 2 American born grandparents, but no other group except those pupils who have 4 American born grandparents.

The boys differ slightly from the girls in the relationship which exists between achievement ratio and the number of American born grandparents. The significant relationship which exists between high achievement ratio and a small number of American born grandparents exists to a greater degree for the girls. Again, two girls who have one American born grandparent have a lower mean achievement ratio than 34 girls who have no American born grandparents. For every other category, however, the pupils who have no American born grandparents excel

those who have 2, 3, or 4 American born grandparents. Again, that group of girls who have 3 American born grandparents slightly excels in mean achievement ratio the girls who have 2 American born grandparents. Where the boys are concerned, there is considerable fluctuation in the relationship that exists between achievement ratio and the number of American born grandparents. The 62 boys with no American born grandparents and the 4 boys who have one American born grandparent have the same mean achievement ratio. The 14 boys who have 2 American born grandparents and the 32 boys who have 4 American born grandparents have the same mean achievement ratio, but it is considerably lower than the mean achievement ratio of the boys who have none or one American born grandparent. There are 3 boys who have 3 American born grandparents whose mean achievement ratio excels any of the other groups. It is this group which is responsible for the seeming great amount of fluctuation which exists in the relationship for the boys. It appears that for boys, high achievement ratio is associated with a low number of American born grandparents, but the degree of the relationship is not quite as great as that which exists between the high achievement ratio for girls and a low number of American born grandparents.

This significant relationship which exists between the number of American born grandparents and the achievement ratio may be accounted for in a number of ways. Apparently, pupils who are of recent foreign extraction, as measured by the number of grandparents who were born in foreign countries, receive some additional stimulus to achieve which pupils who are not of recent foreign extraction do not receive. Perhaps it is because they feel that their foreign extraction is a handicap

TABLE 30

Distribution of Achievement Ratios According to the Number of American Born Grandparents Living the Means for Boys and Girls Separately.

NUMBER OF AMERICAN BORN GRANDPARENTS

Achievement Ratio		0	1	2	3	4	Unknown	Total
10 to 19		2						2
1 to 9		21		2	5	16	5	49
-9 to 0		45	6	20	6	59	13	149
-19 to -10		25		5	6	41	6	83
-29 to -20		2		2		7		11
-39 to -30		1				2		3
	N	96	6	29	17	125	24	297
	M	-6	-5	-7	-6	-9	-5	-7
Girls	N	54	2	16	9	87	6	154
	M	-7	-5	-8	-7	-9	-13	-9
Boys	N	62	4	13	8	36	18	143
	M	-5	-5	-7	-4	-7	-3	-5

F (total group) = 11.014; p = .01-

and, consequently, work harder to overcome this handicap and thereby make higher mean achievement ratios than the pupils who are not of recent foreign extraction. Perhaps pupils whose grandparents are of foreign extraction are more likely to appreciate the opportunities granted by American education, consequently work harder, thereby making higher achievement ratios.

These findings are in general agreement with those of Dosing[161] and Clark[162] previously referred to in Chapter I.

The Relation of Achievement Ratio to Antecedents' Country of Birth

A number of variables were included under the heading of antecedents' country of birth. They are listed below:

Father's country of birth
Mother's country of birth
Father's father's country of birth
Father's mother's country of birth
Mother's father's country of birth
Mother's mother's country of birth

The relationship of the number of American born grandparents to achievement ratio has already been found. The results lead us to believe that the smaller the number of American born grandparents, the higher the mean achievement ratio for these superior pupils studied. The relationship between achievement ratio and the grandparents' country of birth is now treated more extensively, taking the country of birth of one type of grandparent at a time. The relationship between the achievement ratio and the parents' country of birth is included.

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161 Dosing, Minerva F. op. cit. pp. 107, 143-144.
162 Clark, E. L. op. cit. pp. 237-238.

Only those countries which are represented by 10 or more cases are included in separate categories. Countries in which there are less than 10 cases are combined into a miscellaneous category. Below is listed the mean achievement ratio rank for each type of antecedent:

	Russia	Poland	Germany	Misc.	U.S.
Father's country of birth	2	3	1	4	5
Mother's country of birth	3	1		3	5
Father's father's country of birth	3	1	2	4	5
Father's mother's country of birth	3	1	2	4	5
Mother's father's country of birth	3	1	2	4	5
Mother's mother's country of birth	2	1	3	4	5

It will be noted here that the United States ranks last in every case where the mean achievement ratios for pupils who have native antecedents are compared with those of pupils who have foreign born antecedents.

Father's country of birth is the first variable that is considered separately. Under this variable there are only 4 categories in which there are 10 or more cases. The frequency distribution in Table 31 clearly shows that the great majority of the pupils' (236) fathers were born in the United States. 34 pupils have fathers who were born in Russia, 10 have fathers who were born in Poland, and 37 have fathers who were born in 15 miscellaneous foreign countries including Germany, Canada, Austria, England, Lithuania, Hungary, Latvia, Greece, Czechoslovakia, Rumania and Europe.

It is evident that the distribution is heavily skewed to the right. The F test yielded a value of 10.824 for the relationship between pupils whose fathers were born in the United States and pupils whose fathers were foreign born. This F is significant at the one per cent level, indicating that there is a significant relationship existing between

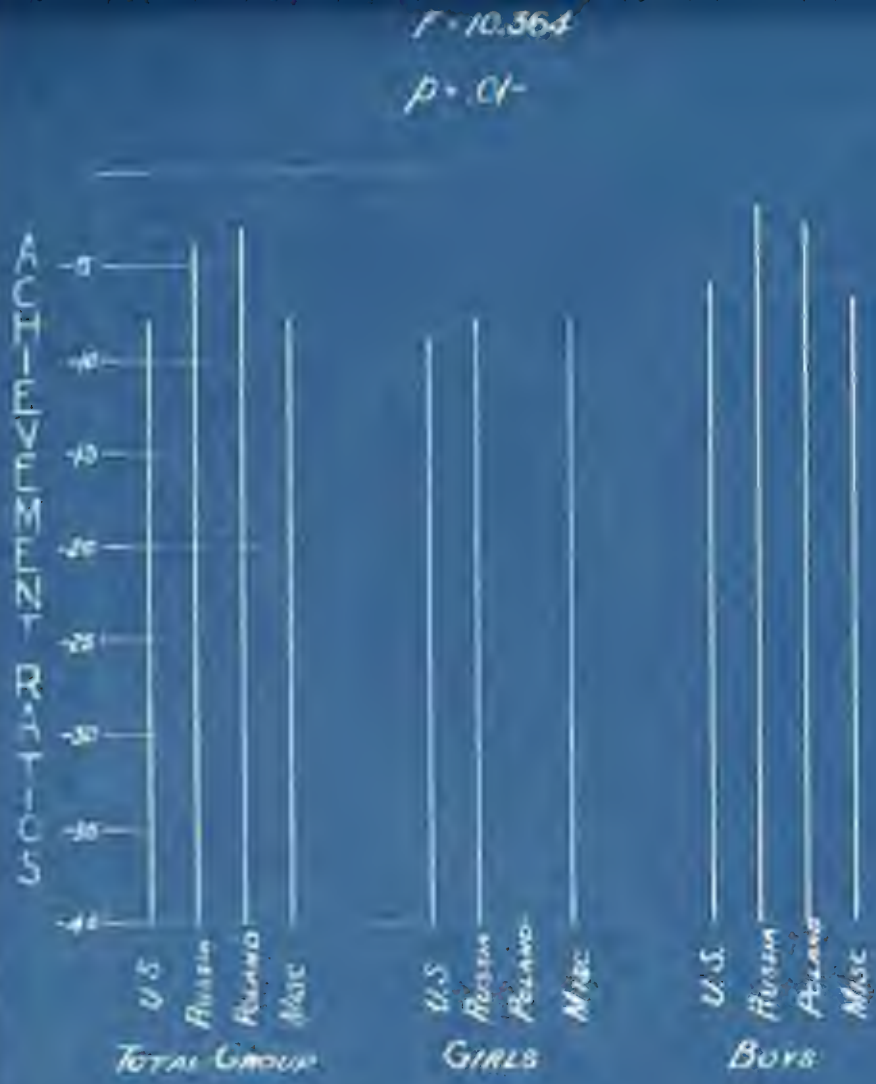
Table 21

Distribution of Achievement ratios According to the Country of Birth [illegible] Mean for Boys and Girls Separately.

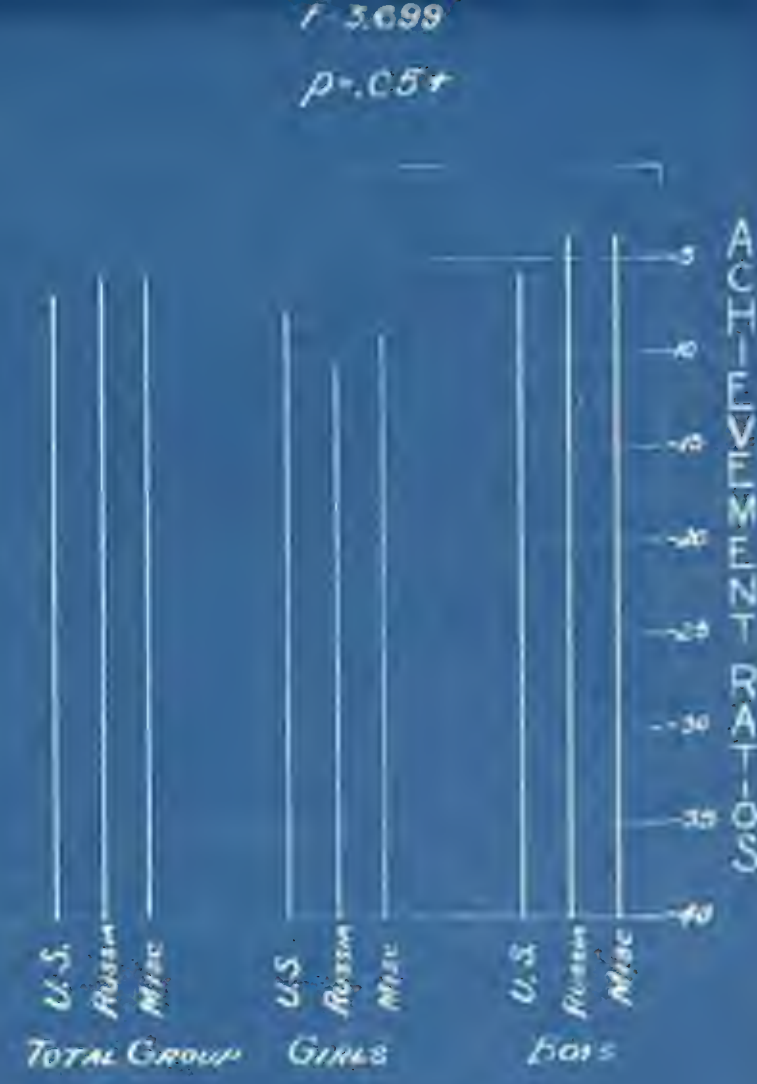
FATHER'S COUNTRY OF BIRTH

Achievement Ratio		U.S.	Russia	Poland	Miscellaneous	Total
10 to 19			1	1		2
1 to 9		35	10	1	3	49
-9 to 0		111	15	7	16	149
-19 to -10		67	8	1	7	83
-29 to -20		11				11
-39 to -30		2			1	3
	N	226	34	10	27	297
	M	-8	-4	-3	-8	-7
Girls	N	130	10		14	154
	M	-9	-8		-6	-9
Boys	N	96	24	10	13	143
	M	-6	-2	-3	-7	-5

F (Total group) = U.S.-Foreign Born = 10.364;
P = .01-



ACHIEVEMENT RATIOS AND
FATHERS COUNTRY OF BIRTH
FIG. 17



ACHIEVEMENT RATIOS AND
MOTHERS COUNTRY OF BIRTH
FIG. 18

achievement ratio and father's country of birth.

It can be seen by referring to the frequency table 31, or to the bar graph in figure 17, the pupils whose fathers were born in the United States have lower mean achievement ratios than the pupils whose fathers were born either in Russia or in Poland, and the same mean achievement ratio as the miscellaneous group.

When the boys and girls are compared, it is found that relatively the same situation exists. In this particular variable there are no girls whose fathers are from Poland, and the girls whose fathers are from Russia and miscellaneous foreign countries excel in mean achievement ratio only to a comparatively small degree the girls whose fathers were born in the United States. The boys whose fathers were born in Russia and Poland have a definite superiority over the boys whose fathers were born in the United States, but the 13 boys from the miscellaneous foreign countries ranked lower in mean achievement ratio than the boys whose fathers were born in the United States.

The relationship between mother's country of birth and achievement ratio is treated next. The frequency table 32 shows that an even greater number of pupils had mothers born in the United States than fathers. There was only one foreign country given as the birthplace of 10 or more mothers, and this was Russia, with 22 cases. There were 24 cases, too, in the miscellaneous category of foreign countries. It is again evident that this distribution is highly skewed to the right, as the great majority of the cases fall in one category.

The t test for the relationship between the achievement of pupils whose mothers were born in the United States and pupils whose mothers were born in foreign countries yielded a value of 1.659 which is

TABLE XV

Distribution of Achievement Ratios According to the Country of Birth of the Mother for Boys and Girls Separately.

MOTHER'S COUNTRY OF BIRTH

Achievement Ratio		United States	Russia	Miscellaneous	Total
10 to 19			1	1	2
1 to 9		38	5	5	49
-9 to 0		132	12	16	149
-19 to -10		69	8	6	83
-29 to -20		10	1		11
-39 to -30		2		1	3
	N	241	28	28	297
	M	-7	-6	-6	-7
Girls	N	136	7	11	154
	M	-8	-11	-9	-9
Boys	N	105	21	17	143
	M	-6	-4	-4	-5

F (total group) U.S.-Foreign Born = 3.699; p = .05-

significant at the five per cent level. There is evidently a relationship existing between achievement ratio and mother's country of birth, but the relationship is not as significant as that which exists between achievement ratio and father's country of birth.

Reference to figure 14 shows that for the total group the mean achievement ratio for the pupils whose mothers were born in Russia and the mean achievement ratio for pupils whose mothers were born in 10 miscellaneous foreign countries including Poland, Lithuania, Germany, Austria, France, England, Hungary, Canada, Czechoslovakia and Europe, exceeded the mean achievement ratio for pupils whose mothers were born in the United States.

It is interesting to note here a fundamental difference between the boys and girls. The mean achievement ratio for the girls whose mothers were born in the United States is better than the mean achievement ratio for the girls whose mothers were born in Russia or any of the miscellaneous foreign countries. This finding is not conclusive because only seven girls studied had mothers born in Russia and only eleven other girls had mothers born in other foreign countries. Probably the small number of cases in this category accounts for this divergent relationship.

On the other hand, the mean achievement ratio of the boys whose mothers were born in the United States is definitely lower than the mean achievement ratio for the boys whose mothers were born in Russia or any of the miscellaneous foreign countries. Twenty one boys have mothers born in Russia and seventeen boys have mothers born in other foreign countries. This finding based on a larger number of cases is again in line with our previous results.

The relationship between the achievement ratio and a pupil's father's father's country of birth is treated next. Under this variable it was found that there were 3 foreign countries in which there were 10 or more cases. The frequency distribution in Table 33 was still heavily skewed to the right, but a considerably larger number of pupils have native born fathers as compared to native born paternal grandfathers. Of the 226 pupils whose fathers were born in the United States, only 154 of these pupils' paternal grandfathers were born in the United States. 46 pupils had paternal grandfathers born in Russia, 24 had paternal grandfathers born in Germany, 10 had paternal grandfathers born in Poland, and 63 had paternal grandfathers born in 14 miscellaneous foreign countries including Lithuania, England, Austria, Hungary, Latvia, Scotland, Canada, Sweden, France, Holland, Bohemia, Greece, Ireland and Europe.

The F test for the relationship between the pupils whose paternal grandfathers were born in the United States and the pupils whose paternal grandfathers were born in foreign countries yields a value of 17.703, which is significant at the one per cent level. There is a significant relationship existing between achievement ratio and father's father's country of birth.

Figure 19 shows again the superiority of pupils who have foreign born antecedents as compared to pupils whose antecedents are native born. In every category of pupils with foreign born paternal grandfathers, the mean achievement ratio is greater than it is for the pupils who have paternal grandfathers born in the United States. It is interesting to note that the pupils whose paternal grandfathers come from

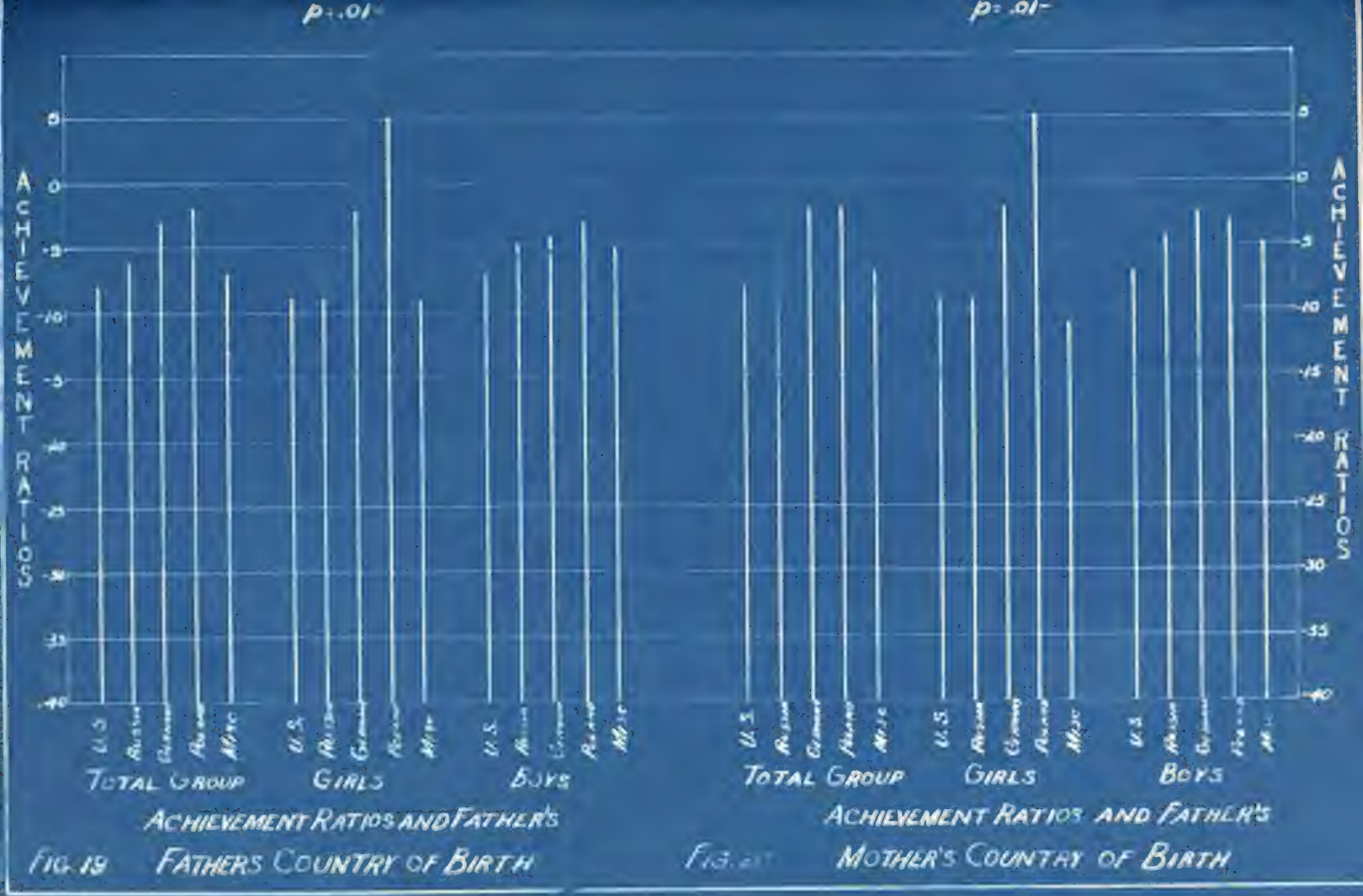
TABLE 73

Distribution of Achievement Ratios According to the Father's Father's Country of Birth Giving the Means for Boys and Girls Separately.

FATHER'S FATHER'S COUNTRY OF BIRTH

Achievement Ratio		U.S.	Russia	Germany	Poland	Miscellaneous	Total
10 to 19			1		1		2
1 to 0		20	10	5	2	12	49
-9 to 0		75	19	18	6	31	149
-19 to -10		48	15	1	1	18	83
-29 to -20		9	1			1	11
-39 to -30		2				1	3
	N	154	46	24	10	63	297
	M	-8	-6	-3	-2	-7	-7
Girls	N	103	15	11	1	24	154
	M	-9	-9	-2	-5	-9	-9
Boys	N	51	31	13	9	39	143
	M	-7	-4	-5	-3	-5	-5

F (total group) = 17.703; p = .01-



ACHIEVEMENT RATIOS AND FATHER'S

FIG. 19 FATHERS COUNTRY OF BIRTH

ACHIEVEMENT RATIOS AND FATHER'S

FIG. 20 MOTHER'S COUNTAY OF BIRTH

Poland rank highest in mean achievement ratio, closely followed by pupils whose paternal grandfathers came from Germany, then Russia, then miscellaneous, and finally last, with the lowest mean achievement ratio, are the pupils whose paternal grandfathers were born in the United States.

Without question high achievement ratio is again associated with foreign antecedents, in this case paternal grandfathers; and low achievement ratio is associated with native born paternal grandfathers.

The same relationship that holds for the total group holds for the boys only. Again the boys whose paternal grandfathers came from the United States are lowest in mean achievement ratio, the miscellaneous group next, followed by Russia and Germany, with Poland ranking highest as the country having the paternal grandfathers of pupils whose mean achievement ratio is highest.

The relationship between achievement ratio and the girls' paternal grandfathers' country of birth fluctuates considerably. 10% girls whose paternal grandfathers came from the United States and 15 girls whose paternal grandfathers came from 12 miscellaneous foreign countries all have the same mean achievement ratio. The 11 girls whose paternal grandfathers came from Germany have a considerably higher mean achievement ratio than any of the 2 groups just mentioned, but these pupils in turn are excelled in mean achievement ratio by the girls whose paternal grandfathers were born in Poland.

The relationship between achievement ratio and father's mother's country of birth was known at most. The frequency distribution of

TABLE 24

Distribution of Achievement Ratios According to the Father's Mother's Country of Birth Giving the Means for Boys and Girls Separately.

FATHER'S MOTHER'S COUNTRY OF BIRTH

Achievement Ratio		U.S.	Russia	Germany	Poland	Miscellaneous	Total
10 to 19			1		1		2
1 to 9		20	9	6	2	12	49
-9 to 0		78	18	17	7	29	149
-1[illegible] to -10		49	14		1	19	83
-29 to -20		9	1			1	11
-39 to -30		2				1	3
	N	158	43	23	11	62	297
	M	-8	-3	-2	-2	-7	-7
Girls	N	106	11	15	1	21	154
	M	-9	-2	-9	-5	-11	-9
Boys	N	52	12	28	10	41	143
	M	-7	-3	-4	-3	-5	-5

F (total group) = 20.746; p = .01-

shown in Table 34 is again skewed to the right as a result of the majority of cases falling in the category of pupils whose paternal grandmothers were born in the United States. 158 pupils have native born paternal grandmothers, 43 pupils have paternal grandmothers born in Russia, 23 have paternal grandmothers born in Germany, 11 have paternal grandmothers born in Poland and 62 have paternal grandmothers born in 12 miscellaneous foreign countries including Canada, Hungary, Lithuania, Sweden, Austria, Latvia, Holland, England, Scotland, Bohemia Greece and Norway.

The F test for the relationship between achievement ratio and father's mother's country of birth yielded a value of 20.746 which was significant at the one per cent level. A significant relationship existed between achievement ratio and this variable. Figure 20 shows that again high achievement ratio was associated with foreign country of birth.

The same consistent relationship between achievement ratio and antecedents' country of birth held for this variable as in the preceding ones. Pupils with native born paternal grandmothers ranked lowest in mean achievement ratio. The mean achievement ratio rank by countries was United States lowest, miscellaneous next, followed by Russia, with Germany and Poland tied for top position.

Figure 20 shows that, with one minor exception, the mean achievement ratios for the boys maintains the same relative relationship to each other as the mean achievement ratios for the total group. As before, the United States ranks lowest in mean achievement ratio, followed by the miscellaneous group, then the Russian group; but in the case of the boys, pupils whose paternal grandmothers were from Germany

slightly saved pupils whose paternal grandmothers came from Poland.

As in the relationship between achievement ratio and the father's father's country of birth, the relationship between achievement ratio and father's mother's country of birth for girls only shows considerable fluctuation from the means for the total group. For the second time, a group of girls turned up which has a mean achievement ratio lower than the mean achievement ratio of girls whose antecedents came from the United States. In this case it is the miscellaneous group. The mean achievement ratios for the girls ranked by countries are as follows: miscellaneous, United States and Russia tied for second, followed by Germany, and then Poland. Without doubt, however, the mean achievement ratio of all girls with native born paternal grandmothers suffers by comparison with the mean achievement ratio of the girls with foreign born paternal grandmothers.

The relationship of achievement ratio to mother's father's country of birth was considered next. This distribution, as shown on Table 35 was considerably skewed to the right caused by the considerable number of pupils (181) whose maternal grandfathers were born in the United States. 64 pupils have maternal grandfathers who were born in Russia, 13 have maternal grandfathers born in Germany, 14 have maternal grandfathers born in Poland, and 63 have maternal grandfathers born in 12 miscellaneous foreign countries including; Hungary, Lithuania, Austria, England, Ireland, Scotland, Latvia, Sweden, Rumania, France, Czechoslovakia, and Italy.

The F test for the relationship between the pupils whose maternal

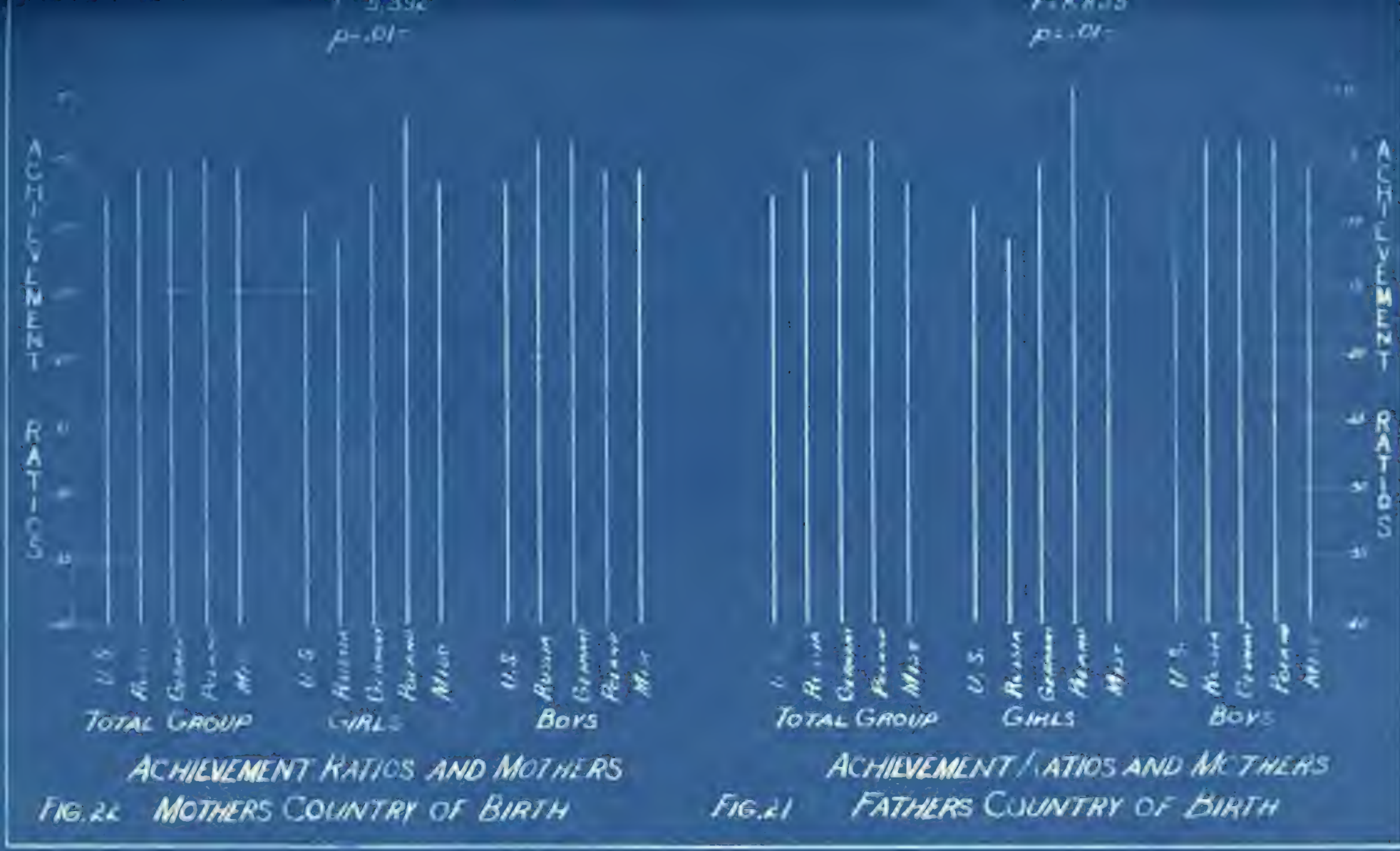
TABLE 35

Distribution of Achievement Ratios According to the Mother's Father's Country of Birth Giving the Means for Boys and Girls Separately

MOTHER'S FATHER'S COUNTRY OF BIRTH

Achievement Ratio	U.S.	Russia	Germany	Poland	Miscellaneous	Total
10 to 19		1		1		2
1 to 9	22	9	2	3	13	49
-9 to 0	71	18	22	7	31	149
-19 to -10	49	16		3	15	83
-29 to -20	7		1		3	11
-39 to -30	2				1	3
N	151	44	25	14	63	297
M	-8	-6	-5	-4	-7	-7
Girls F	98	16	11	2	27	154
M	-9	-6	-4	0	-8	-9
Boys F	53	9	33	12	36	143
M	-7	-4	-4	-4	-6	-5

F (total group) = 8.833; p = .01-



ACHIEVEMENT RATIOS AND MOTHERS
FIG. 22 MOTHERS COUNTRY OF BIRTH

ACHIEVEMENT RATIOS AND MOTHERS
FIG. 21 FATHERS COUNTRY OF BIRTH

TABLE 36

Distribution of Achievement Ratios According to the Mother's Mother's Country of Birth Giving the Means for Boys and Girls Separately.

MOTHER'S MOTHER'S COUNTRY OF BIRTH

Achievement Ratio		U.S.	Russia	Germany	Poland	Miscellaneous	Total
10 to 19			1			1	2
1 to 9		17	10	2	3	17	49
-9 to 0		75	20	21	8	25	149
-19 to -10		46	15	2	3	17	83
-29 to -20		7		1		3	11
-39 to -30		2				1	3
	N	147	46	26	14	64	297
	M	-8	-6	-6	-5	-6	-7
Girls	N	97	11	13	3	30	154
	M	-9	-4	-7	-2	-7	-9
Boys	N	50	35	13	11	34	143
	M	-7	-4	-4	-6	-6	-5

F (total group) = 9.392; p = .01-

grandfathers were native born and the pupils whose maternal grandfathers were foreign born yielded a value of 8.888 which was significant at the one per cent level. A significant relationship exists between achievement ratio and mother's father's country of birth.

Figure 31 indicates that the relationship found previously between high achievement ratio and foreign born antecedents still continues to hold for this variable. Where the total group is concerned, the mean achievement ratio for the pupils whose maternal grandfathers were born in the United States is lower than the mean achievement ratio of the pupils whose maternal grandfathers were born in Russia, Germany, Poland or the miscellaneous group of foreign countries.

The same situation is true for the boys and, with one exception, for the girls. The mean achievement ratios ranked by countries for boys, girls and the total group is as follows: For the boys— United States lowest, miscellaneous next, followed by Russia, Germany and Poland having the same mean achievement ratio; for the girls—Russia lowest, United States next, followed by miscellaneous, Germany and Poland; for the total group— United States lowest, miscellaneous next, followed by Russia, Germany and Poland.

The relationship of achievement ratio to mother's mother's country of birth was the next variable considered. Table 36 shows the distribution of achievement ratios according to the country of birth. That it is secondarily skewed to the right is due to the fact that a considerable number of the cases (187) have maternal grandmothers who were born in the United States. 42 pupils have maternal grandmothers coming from Russia, 38 pupils' maternal grandmothers came from Germany,

14 from Poland, and 84 were from 11 miscellaneous foreign countries including Hungary, Lithuania, Austria, England, Ireland, Scotland, Latvia, Sweden, Roumania, France and Czechoslovakia.

The F test for the relationship between the achievement ratios of pupils whose maternal grandmothers were born in the United States and the achievement ratios of pupils whose maternal grandmothers were foreign born yielded a value of 9.192 which was significant at the one per cent level. Apparently a significant relationship exists between achievement ratio and the maternal grandmother's country of birth.

Figure 32 indicates that high achievement ratio is again associated with foreign born antecedents. The mean achievement ratio ranked by countries for the total group of maternal grandmothers is as follows: United States lowest, followed by Russia, Germany, and the miscellaneous foreign countries all with the same mean achievement ratio, with Poland having the highest mean achievement ratio.

When the boys are considered separately, the same relationship between achievement ratio and antecedents' country of birth holds good with very little fluctuation. In every case the boys whose maternal grandmothers came from the United States rank lower in mean achievement ratio than any category of those with foreign born maternal grandmothers. Figure 33 continues to show considerable fluctuation in the mean achievement ratios of girls having foreign born maternal grandmothers. Another category turned up where the mean achievement ratio was lower than the mean achievement ratio of the native born maternal grandmothers. In this case it was again the Russian maternal grandmothers. The girls who had maternal grandmothers from Germany, Poland, and miscellaneous foreign countries all excel in mean achievement ratio the girls whose maternal grandmothers were born in the United States.

Summary

The relationship between achievement ratio and the pupils' antecedents' country of birth seems to be rather consistent. The superiority in achievement ratio of pupils whose antecedents were from foreign countries over those whose antecedents were native born is apparent, consistent, and significant. This relationship holds for each of the variables studied--pupils whose fathers, mothers, paternal grandfathers, paternal grandmothers, maternal grandfathers, and maternal grandmothers were born in foreign countries are more likely to have higher achievement ratios than pupils whose parents and grandparents were born in the United States.

These findings are in agreement with those of Dearing[183] and Strabel[184] and may be explained in a number of ways. Pupils whose antecedents were foreign born are more likely to expend more effort in overcoming language and cultural differences and consequently have higher achievement ratios than pupils whose antecedents were native born. Another explanation of this relationship between achievement ratio and the foreign born antecedents of superior pupils may be that these pupils having foreign born antecedents are more likely to appreciate the opportunities offered in America, where the opportunity is often greater than that which they may have enjoyed in their parents' or grandparents' native lands. Because this is so, it may exist that appreciation of the opportunities offered in America may be instilled in the pupil by his foreign born parent or grandparent and so motivate him to greater achievement.

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183 Dearing, Minerva S. op. cit. p. 144.
184 Strabel, Louise, op. cit. p. 118

The Relation of Achievement Ratio to Father's Education

Data was collected on the amount of formal education enjoyed by the father of each pupil studied. Table 37 shows that 72 fathers had not gone further than the sixth grade, 102 fathers had attended high school without graduating, 48 had graduated from high school, 12 had attended college without graduating, and 40 had graduated from college. In 56 cases information was incomplete regarding the education of the fathers. The distribution is skewed to the right, with the median falling in the attended but did not graduate from high school category.

The F test yields a value of 20.496 which was significant at the one per cent level. A relationship does exist between achievement ratio and the amount of father's education; and this relationship is significant.

Reference to Figure 22 indicates that, generally, the more education the father has, the higher the achievement ratio of the pupil. This trend is particularly evident, with one exception. The pupils whose fathers attended college but did not graduate, drop in achievement ratio a trifle below the pupils whose fathers had graduated from high school. Peculiarly enough, the pupils whose fathers' education was unknown rank a trifle above the mean for the total group in the distribution.

When the relationship between the father's education and achievement ratio of the girls is observed, in Figure 23, it is noticed that the same general trend held true - the more education the girls' fathers had, the higher the girls' achievement ratio. There is one exception to this. The girls whose fathers had graduated from college rank a trifle below both the girls whose fathers had graduated from high school

and girls whose fathers had attended college but did not graduate. The girls whose fathers' education was unknown rank lower in mean achievement ratio than any other group except the girls whose fathers had attended elementary school.

The relationship between the achievement ratio and the boys' fathers' education is somewhat irregular. Boys whose fathers had attended high school and boys whose fathers had attended college without graduating have the same mean achievement ratio which was lower than the mean achievement ratio for boys whose fathers had attended elementary school, graduated from high school, and graduated from college. The chief characteristic of the bar graph given in Figure 28, showing the relationship between achievement ratio and father's education is the great amount of fluctuation.

The significant positive relationship existing between the amount of education of a pupil's father and his achievement ratio may be accounted for in a number of ways. It is quite possible that a pupil whose father is better educated will be better able to help him with his school work, and this may result in a higher achievement ratio for the pupil. Pupils are more likely to respect and look up to parents who are better educated, and consequently strive harder to succeed in their school work in order to be more like their parents. Parents who have better education very often appreciate its value and therefore encourage their offspring to work harder in school so that they, too, may receive a good education.

Perhaps the fact that the pupils whose fathers attended college but did not graduate have a lower mean achievement ratio than the pupils whose fathers graduated from high school, may be explained as a change

error, as this difference is rather small.

The difference between the relationship of the achievement ratio of girls to their father's education and the achievement ratio of boys to their father's education is a little more difficult to explain. With the exception of only 15 girls whose fathers graduated from college, the relationship between the amount of education of the girls' fathers and the achievement ratio of the girls is consistently positive, more so for the girls than for the total group. Perhaps the greater influence of the father's education on the girls' achievement ratio may be accounted for by saying that the girls are more influenced in school matters by their fathers than are boys.

The irregular relationship which exists between the achievement ratio of the boys and their father's education seems to indicate that the boys are helped and encouraged much less by their fathers than are the girls. There may be a compensating cause for this fluctuation in the relationship for this variable. It is possible that the boys, seeing the disadvantages of less of education in their fathers, strive that much harder to acquire an education for themselves. This may account for the fact that the boys whose fathers had attended only elementary school excelled in mean achievement ratio the boys whose fathers attended high school and boys whose fathers attended college. It does not, however, account for the fact that boys whose fathers graduated from high school and college excelled in mean achievement ratio the boys whose fathers attended elementary school. This fluctuation in the relationship between achievement ratio and boys' fathers' education is better accounted for by the fact that there are only 16 boys whose fathers attended elementary school and only 3 boys whose fathers attended college without graduating.

TABLE 37

Distribution of Achievement Ratios According to the Fathers' Education Giving the Means for Boys and Girls Separately.

FATHERS' EDUCATION

Achievement Ratio		Elementary	Attended High School	H.S. Grad.	College	Coll. Grad.	Unknown	Total
10 to 19				1		1		2
1 to 9		3	13	9	2	9	13	49
-9 to 0		16	51	31	7	21	23	149
-19 to -10		15	35	5	3	7	18	83
-29 to -20		4	2	1		2	2	11
-39 to -30		1	1	1				3
	N	39	102	48	12	40	56	297
	M	-11	-8	-5	-6	-5	-7	-7
Girls	N	23	53	31	9	23	15	154
	M	-15	-8	-6	-5	-7	-11	-9
Boys	N	16	49	17	3	17	31	143
	M	-4	-8	-3	-8	-2	-5	-5

F (total group) = 20.493; p = .01-

ACHIEVEMENT RATIOS AND FATHER'S EDUCATION
TOTAL GROUP
GIRLS
BOYS

FIG. 23

The small number of cases in these two categories make the mean achievement ratio for the 2 categories unreliable. These findings are in general agreement with those of Douglass and Campbell[165]. Clark[166], Smith[167], and Desing[168], however find a negative relation between pupils' achievement and the fathers' education. Perhaps the disagreement existing may result from the greater influence of fathers' education on girls than on boys.

The Relation of Achievement Ratio to Mother's Education

The formal education received by the mothers of the superior pupils studied ranges from attendance to elementary school through graduation from college.

The distribution of achievement ratios of the pupils according to the amount of education received by their mothers shown in Table 38 is skewed to the left with the mean education of the mothers falling in the attended but did not graduate from high school category. In 46 cases of the 297 studied, the extent of the mother's education is not given. The distributions for the boys and girls varied little in this respect from that for the total group.

The F test for analysis of variance yielded a value of 12.248 which, when the degrees of freedom are considered, is significant at the one per cent level, making the null hypothesis untenable. A significant relation very likely exists between achievement ratio and the amount of mother's education.

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165 Douglass, Harl R. and Campbell, Ina, op. cit. pp. 158-159.
166 Clark, E. L., op. cit. p. 237.
167 Smith, Harry P., op. cit. p. 27.
168 Desing, Minerva F., op. cit. p. 167.

Figure 24, showing the graphic relationship between achievement ratio and mother's education, indicates that, in general, the greater the amount of education of the mother the higher the pupil's achievement ratio will be. This is true for the total group with one exception; the mean achievement ratio of pupils whose mothers have attended only elementary school is greater than the mean achievement ratio of the pupils whose mothers have attended high school, and equals that of the high school graduate group.

The relationship between achievement ratio of girls alone and their mother's education is more pronounced than it is for the total group. With no exceptions, high mean achievement ratio for the girls is associated with increased education of the girls' mothers. That the relation existing here is very consistent is shown in Figure 24.

For the boys, there is little relation between achievement ratio and mother's education, as shown in Figure 24. Only two of the categories have mean achievement ratios that vary at all from the mean for all the boys. The boys whose parents attended high school fall one point below the mean achievement ratio of -7 for all the boys and the boys whose parents were college graduates have a mean achievement ratio two points above the mean. The relation of low achievement ratio with increased education of the mother still exists but to a degree which was no longer significant.

The relation between pupils' achievement ratios and their mother's education may be accounted for in several ways. It is evident that the existing relationship is due chiefly to the girls and not the boys. Apparently the achievement ratios of the girls is more affected by the amount of their mother's education than is the achievement ratio of

TABLE 32

Distribution of Achievement Ratios according to the Mothers' Education Giving the Means for Boys and Girls Separately.

MOTHERS' EDUCATION

Achievement Ratio		Elementary	Attended High School	H.S. Grad.	College	Coll. Grad.	Unknown	Total
10 to 19		1		1				2
1 to 9		1	15	10	2	8	13	49
-9 to 0		16	51	46	4	13	17	149
-19 to -10		5	40	16	2	5	15	83
-29 to -20		2	5	3			1	11
-39 to -30			2	1				3
	N	25	113	79	8	26	46	297
	M	-7	-9	-7	-5	-4	-6	-7
Girls	N	9	68	45	6	15	11	154
	M	-12	-11	-8	-5	-4	-7	-9
Boys	N	16	45	34	2	11	35	143
	M	-5	-6	-5	-5	-3	-6	-6

F (total group) = 12.248; p = .01-

the boys. The same reasons that account for the relationship between pupils' achievement ratio and father's education will apply to mother's education. The more educated the mother, the more she is able to help, encourage, and inspire her children, particularly girls, to increase their achievement ratios in school.

From a study of this relationship and the comparison of pupils' achievement ratios with father's education, it would seem that there is only a small relationship between the achievement ratio of boys and the degree of the parents' education, while there is a marked significant relationship between achievement ratio for girls and the degree of parents' education. Perhaps this is due to the fact that the parents exert a greater influence over girl children than boy children.

The Effects of Achievement Ratio to the Number of Siblings in the Family.

There is some question as to whether there is any relationship between the achievement ratio of an only child and a pupil who is a member of a large family or any of the intermediate steps between these to extremes. The number of siblings a pupil has was subdivided into seven categories—only children, pupils who have one brother and no sisters, pupils who have one sister and no brothers, pupils who have one brother and one sister, pupils who have two brothers and no sisters, pupils who have two sisters and no brothers, and pupils who have more than two brothers and sisters. The frequency table #3 shows that the distribution is rather skewed toward the right because of the large number of pupils who are only children or have only one brother or sister. This is true for both boys and girls as well as the total group.

The F test for the distribution yields a value of 9.[illegible] which is

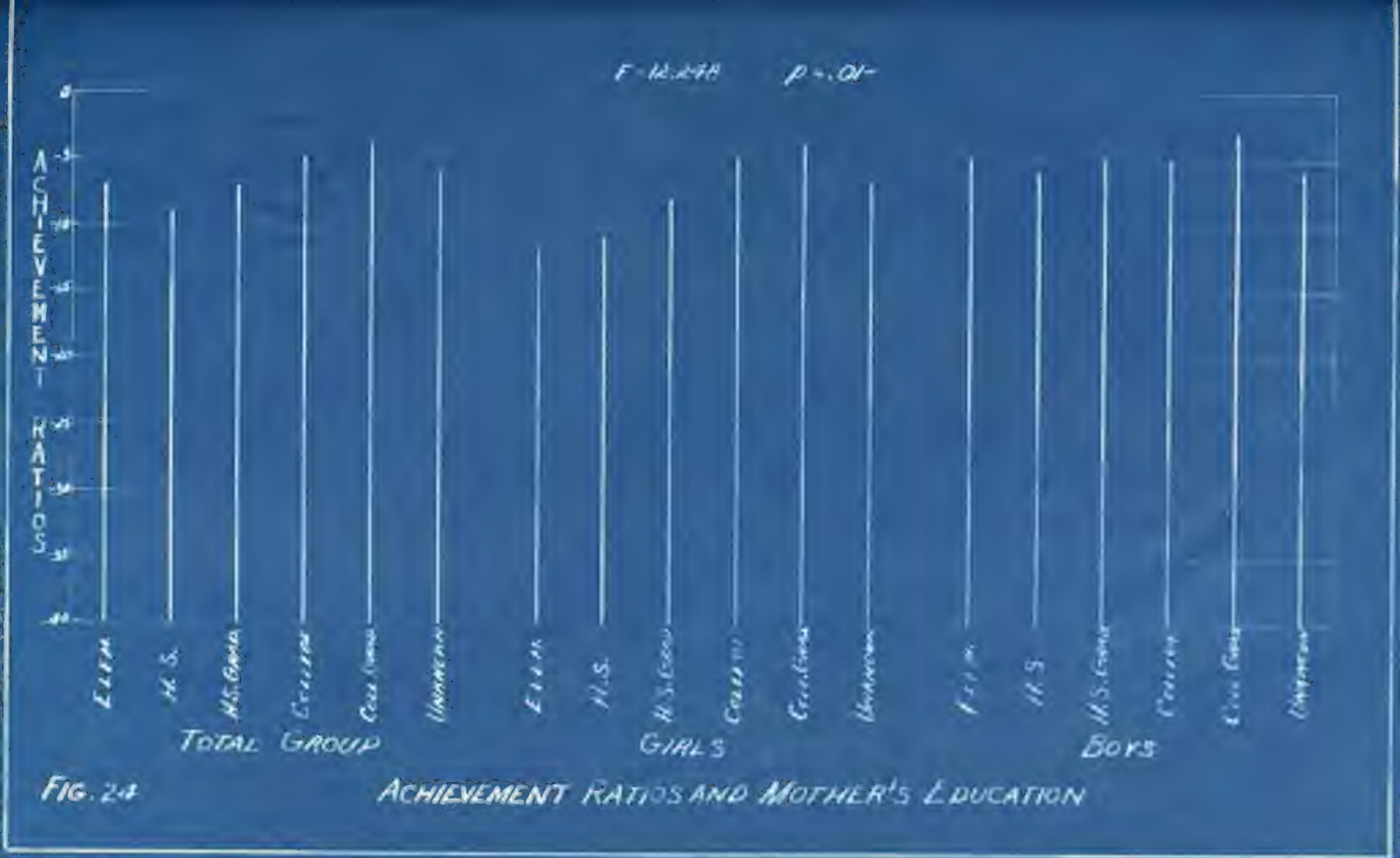

FIG. 24 ACHIEVEMENT RATIOS AND MOTHER'S EDUCATION

significant at the one per cent level. There is less than one chance in a hundred that this relationship between achievement ratio and the number of siblings in the family is not a significant relationship.

Figure 25 shows rather clearly that the pupils who are only children have a higher mean achievement ratio than those pupils who have two or more siblings, but are exceeded in mean achievement ratio by the pupils who have one sibling. The one exception in the relationship for the total group is that the pupils who have one brother and one sister have a mean achievement ratio which equals the mean achievement ratio for the only children. For the total group the category having the highest mean achievement ratio is the pupils who have one sister and no brothers.

When the girls only are compared, it appears that again the smaller the number of siblings, the higher the mean achievement ratio. This is not quite so noticeable in the case of only girl children. The mean achievement ratio of the categories of girls by rank is as follows: (1) girls having one brother, no sisters; (2) girls having one sister, no brothers; (3) girls having one brother and one sister; (4) only girl children tied with girls having two sisters, no brothers; (5) girls having more than two brothers or sisters; (6) girls having the lowest mean achievement ratio are those who have two brothers with no sisters.

The relationship between the achievement ratio of the boys and the number of siblings they have fluctuates considerably, but the only boy children and the boys who have only one sibling rank higher in mean achievement ratio than the boys who have more than one sibling, with one exception. The exception occurs in the case of the boys who have two brothers and no sisters. When the mean achievement ratio of the boys is ranked according to the number of siblings they have, the boys who have

one sister and no brothers or two brothers and no sisters are tied for the highest mean achievement ratio; the boys who are only children and the boys who have one brother and no sister are tied in the next position, followed by the boys who have one brother and one sister, then the boys who have more than two brothers or sisters, with the boys who have two sisters and no brothers ranking lowest in mean achievement ratio.

In general, it seems that for boys, girls and the total group, the smaller the number of siblings the higher the achievement ratio is likely to be. Griffiths[169] and Burack[170] come to the same conclusion.

The relationship which exists between achievement ratio and the number of siblings in the family can be accounted for in a number of ways. It is quite likely that the families in which there are a smaller number of children will have more time to devote to these children to help and encourage them to put forth their best efforts in school. It is quite likely that this additional attention given to a sibling in a small family would result in an increased achievement ratio. The fact that the only children do not have the highest mean achievement ratios may be accounted for by saying that perhaps these only children are given too much attention and perhaps even "spoiled", which may have a detrimental effect upon their achievement ratio. Pupils who come from families in which there are smaller numbers of siblings probably spend less time with their siblings in what might be called extra-school activities and probably more time is available for them to spend on their class work. This may have a beneficial effect upon the achievement ratio of pupils living in small families.

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169 Griffits, Charles S. "The Influence of Family on School Marks", School and Society, 24: 713-716. Dec. 4, 1926

170 Burack, James H. op. cit. p. 830

It is perhaps a little more difficult to account for the fact that that group of girls who have the lowest mean achievement ratio is the group who have two brothers and no sisters, while that group of boys who have the lowest mean achievement ratio is the group who have two sisters and no brothers. There seems to be a definite relationship existing here. Perhaps pupils who have two siblings of the opposite sex and none of their own sex, are likely to have lower mean achievement ratios than any other group of pupils. Perhaps the pupils who have no siblings of like sex, but have two siblings of the opposite sex have more things done for them by both their parents and their siblings and consequently have lower mean achievement ratios.

The relation of achievement ratio to sibling's position in the family.

This variable is divided into three categories--the youngest siblings in families form one category, pupils who are oldest and the in-between pupils formed the other two. It is very interesting to note that there are less pupils in the in-between category than in either of the other two. The frequency distribution is of the flat inverted bell type, heavily weighted at both ends and shallow in the middle. There are 95 youngest children, 84 neither youngest nor oldest, and 89 oldest children isolated in the study. The remaining children are only children.

The F test for the total group yields a value of 7.302 which is significant at the one per cent level, indicating that there is a significant relationship existing between achievement ratio and sibling's position in the family.

Reference to Table 40 indicates that the oldest children have the

TABLE 39

Distribution of Achievement Ratios According to the Number of Siblings in Family Giving the Means for Boys and Girls Separately.

Achievement Ratio	Only Child	1 S. No B.	1 B. No S.	1 S. 1 B.	2 S. No B.	2 B. No S.	2 S. 1 B.	2 B. 1 S.	Total
10 to 19	1	1							2
1 to 9	7	12	10	6	3	5	6		49
-9 to 0	31	34	26	12	11	8	25		149
-19 to -10	18	12	9	10	7	6	21		83
-29 to -20	1	2	1		3	3	1		11
-39 to -30	1	1					1		3
N	61	62	46	28	34	22	54		297
M	-7	-8	-5	-6	-9	-8	-9		-7
Girls N	35	27	20	16	14	11	31		154
M	-9	-6	-7	-7	-13	-9	-10		-9
Boys N	26	35	26	12	10	11	23		143
M	-5	-5	-4	-6	-4	-8	-7		-6

F (total group) = 9.806; p = .01-

B - BROTHER
S - SISTER

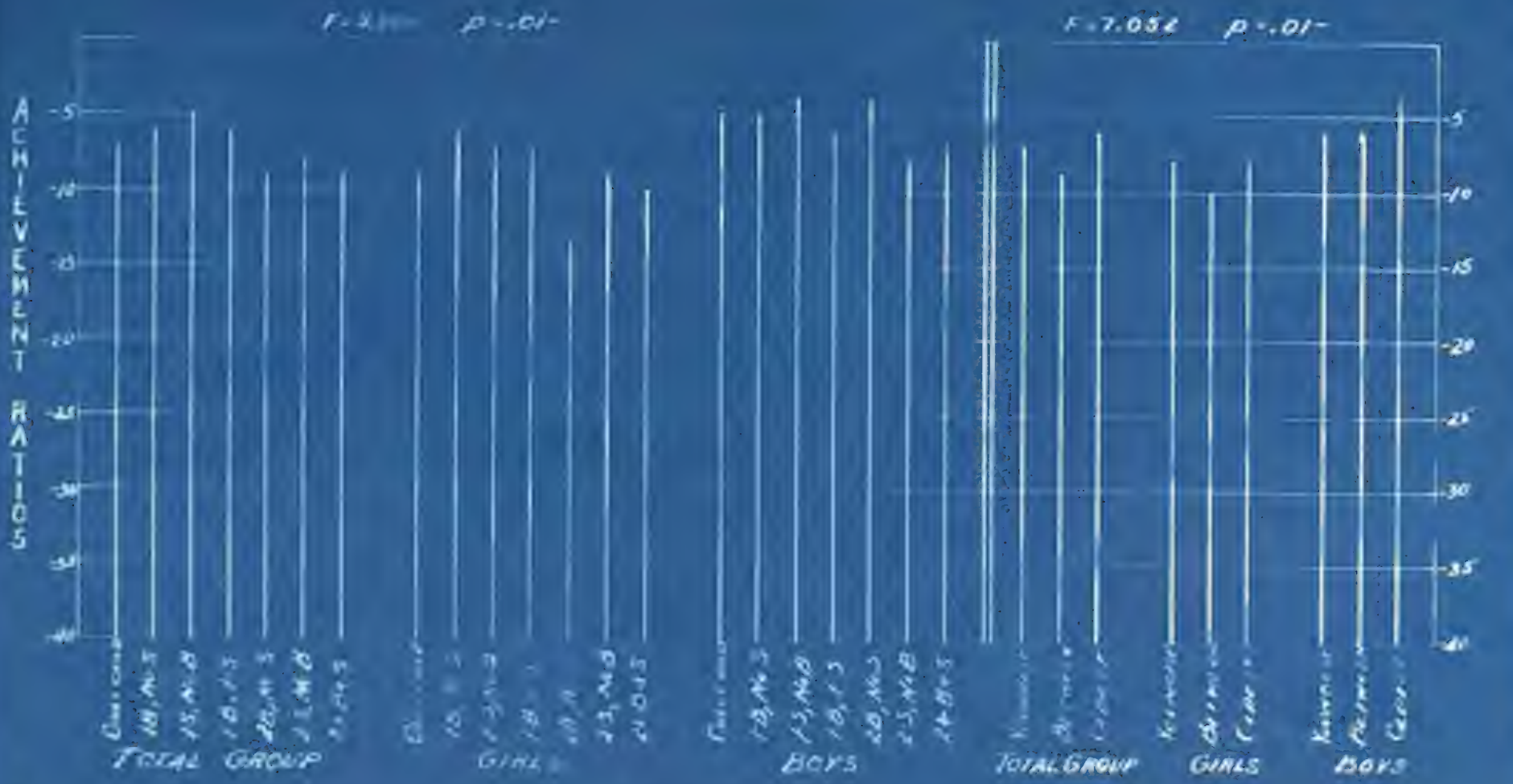

FIG. 25 NUMBER OF SIBLINGS IN FAMILY I

FIG. 26 SIBLINGS POSITION IN FAMILY II

TABLE 40

Distribution of Achievement Ratios According to the Sibling's Position in Family Using the Means for Boys and Girls Separately.

Achievement Ratio		SIBLING'S POSITION IN FAMILY: Youngest	Between	Oldest	Total
10 to 19				2	2
1 to 9		17	5	20	42
-9 to 0		47	28	41	116
-19 to -10		28	17	20	65
-29 to -20		3	3	4	10
-39 to -30			1	1	2
	N	95	54	88	237
	M	-7	-9	-6	-7
Girls	N	47	29	43	119
	M	-8	-10	-8	-9
Boys	N	48	25	45	118
	M	-6	-6	-4	-5

F (total group) = 7.052; p = .01-

highest mean achievement ratio with the youngest children ranking second, the only children ranking third, and the children who were neither youngest nor oldest ranking lowest in mean achievement ratio.

The same situation held true for the girls, except that the oldest children and the youngest children all tied in mean achievement ratio two points above the mean achievement ratio for the inbetween girl siblings.

There is a slight variation when the relationship between the boy's position in the family and their achievement ratio is observed. It is noted that the youngest and neither youngest nor oldest children have the same mean achievement ratio and that both groups are excelled by the oldest group.

The relationship between the achievement ratio and the sibling's position in the family may be accounted for in several ways. The oldest siblings probably have to approach their problem with the least assistance from their younger brothers and sisters and consequently develop habits of action which have a beneficial influence upon their achievement ratio. The youngest children ranked below the oldest children and above the remaining children. Perhaps this is because they receive so much attention, encouragement, and help from their parents and their other siblings that their achievement ratio is beneficially affected. The inbetween children are probably the most neglected group, probably having the novelty of the tasks taken off their older siblings, but getting less attention than the youngest siblings, and consequently having lower mean achievement ratios than either of the two groups. Jones[171] in discussing cases of outstanding achievement

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171 Jones, Harold E. op. cit. pp. 100-101

attribution the advantage of the first born to better health. Conklin[172] on the other hand, finds neither the successful nor failing pupils of superior intelligence show any preponderance of favorable position among their siblings.

The Relation of Achievement Ratio to Environment - Rural or Urban

The measure of environment selected was determined by which of 4 groups the individual had belonged to or a resident the greater part of his life. The 4 groups selected were pupils living in Baltimore, any city other than Baltimore, any town, and pupils living in the country. The very great majority of the cases (268) have spent the greater part of their lives in the city of Baltimore. The remaining 32 cases are lumped into one group who have lived the larger part of their lives outside of Baltimore, either in an urban or rural community. Table 41 gives this distribution showing how highly skewed to the right it is for the boys, girls and total group.

The F test yielded a value of 14.519, which is significantly high enough to rule out the null hypothesis that no relationship exists between achievement and the variable under consideration. There is less than one chance in a hundred that the existing relationship is not significant.

Figure 37 graphically illustrates the relationship for the boys, girls, and total group. For the total group it is observed that the mean achievement ratio for the native Baltimoreans is significantly higher than the mean achievement ratio for the remaining pupils.

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172 Conklin, Edmund, op. cit. pp. 111-130

Only a small number (14) of the pupils studied have spent the greater part of their lives in rural communities, but this group makes lowest in achievement ratio. This is not indicated on the data given, but is merely added here as a matter of information.

When the girls alone are considered, it is observed from Figure 37 that the mean achievement ratio for the native Baltimore girls is much higher than the mean achievement ratio of the remaining girls. This is definitely not the case when the boys alone are considered. In fact, there is no difference at all in mean achievement ratio for the boys who have lived in Baltimore the greater part of their lives and the boys who have lived out of Baltimore. Evidently, the significant relationship existing between this aspect of environment and achievement ratio is due entirely to the influence of the girls. Where the girls in this study are concerned, high achievement ratio is associated with living in Baltimore, and low achievement ratio is associated with living out of Baltimore or in the surrounding rural districts.

This significant relationship which exists between achievement ratio and this aspect of environment for girls and not for boys may be accounted for in this way. The increased advantages of a metropolitan environment have a much greater effect upon girls than upon boys. Consequently, their achievement ratios are more highly affected.

The Relation of Achievement Ratio to Family Residence.

By family residence is meant what family or adult group the pupil is living with. The pupil may be living with both parents, with either parent, or with neither parent. The great majority of the pupils studied (291) live with both parents in intact families. Of the remaining seven

TABLE 41

Distribution of Achievement Ratios According to Environment Giving the Means for Boys and Girls Separately.

Achievement Ratio		ENVIRONMENT Baltimore	Out of Baltimore	Total
10 to 19		2		2
1 to 9		48	1	49
-9 to 0		130	19	149
-19 to -10		77	6	83
-29 to -20		9	2	11
-39 to -30			3	3
	N	266	31	297
	M	-7	-11	-7
Girls	N	133	21	154
	M	-8	-14	-9
Boys	N	133	10	143
	M	-5	-3	-4

F (total group) = 14.917; p = .01-

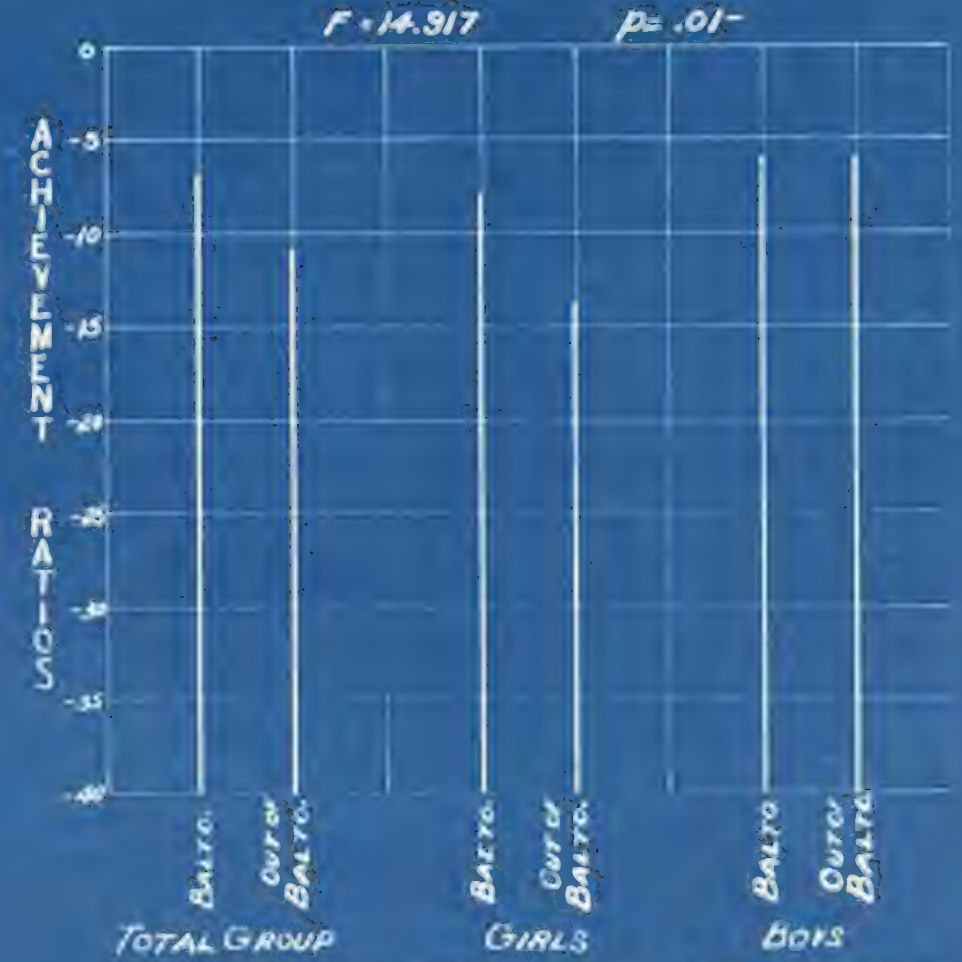

FIG. 27

ACHIEVEMENT RATIOS AND ENVIRONMENT

21 are living with one parent, the other being dead; 20 are living with one parent, the other being separated; and 8 are cared for by guardians.

The frequency distribution in Table 42 naturally gives a distribution which is highly skewed to the right for the boys, girls, and the total group. Figure 28 illustrates graphically the relationship between achievement ratio and family residence for the total group, girls and boys. For the total group high achievement ratio is apparently associated with the pupil whose parents are separated. The pupils who have the next highest achievement ratio are those who are living with both parents, followed by the pupils who have one parent dead, with the pupils living with neither parent ranking lowest in mean achievement ratio. When the mean achievement ratio of children from broken families is compared with the mean achievement ratio of children from intact families, it is observed that the children from broken families had a slight advantage.

The F test, yielding a value of 4.398, indicates that the relationship existing between achievement ratio and family residence is significant at the one per cent level. High achievement ratio is associated with broken families to a significant degree.

The relationship is quite marked in the case of the boys where the boys from broken families have considerably higher mean achievement ratio than either the boys who have one parent dead or boys who are living with both parents. Where the girls only are considered, the relationship is not so well marked. The girls who are living with both parents have higher mean achievement ratio than any of the other 3 groups of girls, but the girls whose parents were separated have a higher

mean achievement ratio than the girls whose one parent was dead or the girls who are not living with either parent. It would seem that high achievement ratio is markedly associated with boys living with one parent when their parents are separated and with girls living with both parents. For all cases, disregarding sex, high achievement ratio is associated with pupils living with one parent with the other separated.

Accounting for this relationship which exists between the high achievement ratio and family residence is quite a difficult matter. It seems apparent that the boys who are living with one of the separated parents are stimulated in some way to work harder in school than any of the other three groups of boys studied. Perhaps this is due to the fact that in most separated families the pupils live with their mothers, and the mothers have to work in order to maintain the home while the children go to school. In the case of a boy who is attending school, this is probably a powerful incentive to learn as much as he can as quickly as he can so that he may relieve his mother of the hardships connected with supporting the family.

In the case of the girls who are living with one of two separated parents, in most cases the mother, high achievement ratio is not so evident. The girls evidently are not quite so highly stimulated by such a situation, although they do excel in mean achievement ratio those girls who are living with one parent with the other dead, or with neither parent. In the case of the girls, it seems that living with both parents together is an advantage which helps to keep up their mean achievement ratio.

As far as the entire group is concerned, the influence of the boys is sufficient to make the mean achievement ratio for all of the pupils

TABLE 42

Distribution of Achievement Ratios According to Family Residence Giving the Means for Boys and Girls Separately.

Achievement Ratio		FAMILY RESIDENCE				
		Both Parents	One Parent Dead	Parents Separated	Not Living With Either Parent	Totals
10 to 19		2				2
1 to 9		38	4	5	2	49
-9 to 0		133	7	9		149
-19 to -10		68	7	7	1	83
-29 to -20		8	2		1	11
-39 to -30		2			1	3
	N	251	20	21	5	297
	M	-7	-9	-6	-13	-7
Girls	N	128	10	11	5	154
	M	-8	-12	-10	-13	-9
Boys	N	123	10	10	0	143
	M	-6	-5	-2	0	-5

F (total group) = 4.998; p = .01-

ACHIEVEMENT RATIOS AND FAMILY RESILIENCE
TOTAL GROUP
GIRLS
BOYS
Both Parents
One Parent
Parents Separated
Mot. Living With Parent
Both Parents
One Parent
Parents Separated
Mot. Living With Parent
Both Parents
One Parent
Parents Separated
Mot. Living With Parent
0
10
20
30
40
50
60
F = 4.938
p = .01

FIG. 28

in the separated family group excel the mean achievement ratio of the other 3 groups; but even with the total group the influence of the girls is strong enough to make the pupils who are living with both parents rank second in mean achievement ratio.

Conklin[173] finds no reliable differences between successful and failing pupils in the separation of parents, but Desing[174] finds that children of separated parents gain less in achievement than do pupils from intact homes. The findings of this study for boys on this variable are in general disagreement with those of most investigators, including Conklin and Desing. The findings for girls, however, are in essential agreement.

The Relation of Achievement Ratio to Pupil's Health I

The estimates of the nurse and doctor, based upon a complete physical examination given the pupil, determine whether the pupil's health is good or not. Of the 297 pupils studied, 283 enjoy good health. The 14 remaining cases are considered by both the doctor and nurse to have poor health.

Table 43 indicates how highly skewed the distribution is to the right as a result of the great majority of the pupils having good health. This is true for both boys and girls as well as for the total group.

The F test yielded a value of 1.32 which was not significant. There are more than five chances in a hundred that no relationship exists between this measure of pupil's health and achievement ratio.

It is interesting to note that the girls with good health had higher mean achievement ratio than the girls with poor health, while the boys

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173 Conklin, Agnes, op. cit. p. 120.
174 Desing, Minerva F., op. cit. p. 107.

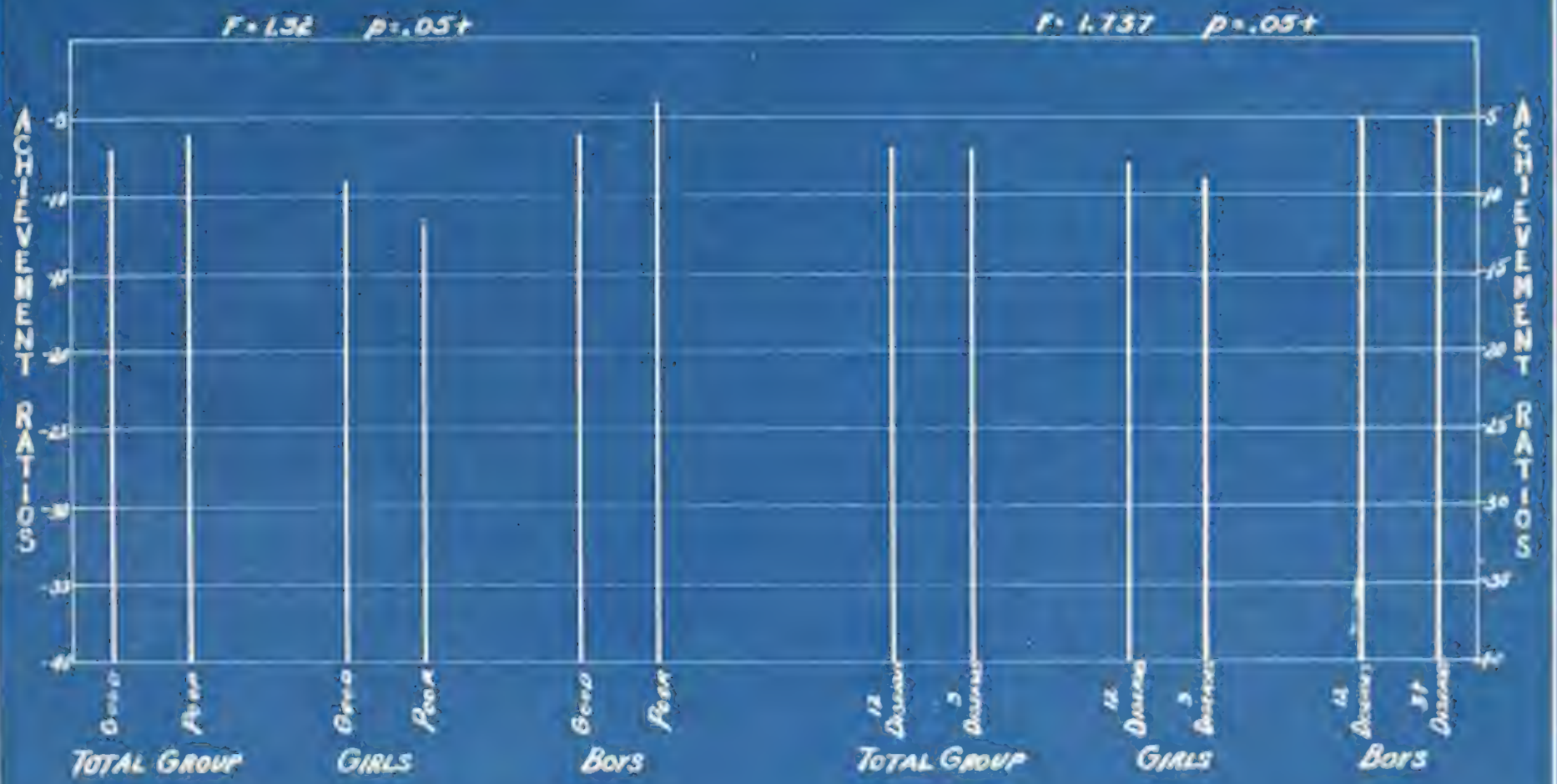

FIG. 29 ACHIEVEMENT RATIOS AND PUPILS HEALTH I

FIG. 30 ACHIEVEMENT RATIOS AND PUPILS HEALTH II

TABLE 43

Distribution of Achievement Ratios According to Pupils' Health I Giving the Means for Boys and Girls Separately.

PUPILS' HEALTH I

Achievement Ratio		Good	Poor	Total
10 to 19		2		2
1 to 9		46	3	49
-9 to 0		142	7	149
-19 to -10		79	4	83
-29 to -20		11		11
-39 to -30		3		3
	N	283	14	297
	M	-7	-6	-7
Girls	N	151	3	154
	M	-9	-12	-9
Boys	N	132	11	143
	M	-6	-4	-5

F (total group) = 1.82; p = .05

with poor health have a higher mean achievement ratio than the boys with good health, but again the number of cases in the poor health category is so small that the relationship is not significant.

Such a finding is not hard to account for because of the small number of cases in one of the two categories included in the variable and also because the mean achievement ratios for the two groups are only one point apart.

TABLE 44

Distribution of Achievements Ratios According to Pupils' Health II Giving the Means for Boys and Girls Separately.

PUPILS' HEALTH II

Achievement Ratio		1,2 Diseases	3 Diseases	Total
10 to 19			2	2
1 to 9		13	36	49
-9 to 0		30	119	149
-19 to -10		19	64	83
-29 to -20		2	9	11
-39 to -30			3	3
	N	64	233	297
	M	-7	-7	-7
Girls	N	26	128	154
	M	-8	-9	-9
Boys	N	38	105	143
	M	-6	-5	-5

F (total group) = 1.737; p = .05+

THE RELATION OF ACHIEVEMENT RATIO TO PUPIL'S HEALTH II

The second measure of the pupil's health obtained from the questionnaire and the physical health record is the number of childhood diseases each pupil has contracted. Of the 277 pupils studied, 213 of them have had 3 or more childhood diseases, including such things as measles, chicken pox, mumps, etc. The 64 remaining pupils have had either one or two such childhood diseases.

As can be seen by looking at Table 44, the distribution is heavily skewed to the right for both boys and girls as well as the total group because of this fact.

The F. test yielded a value of 1.737 for the relationship between achievement ratio and this measure of pupil's health. This value is not significant, as there are more than five chances in a hundred that no relationship exists between achievement ratio and the measure of pupil's health.

Figure 30 illustrates how closely the mean achievement ratio for the two groups is related. For the total group, the mean achievement ratio for the pupils who have had three or more childhood diseases is exactly the same as the mean achievement ratio for the pupils who have had one or two childhood diseases. The same thing is true for the boys, while the variation for the girls is so slight as to be discounted entirely. Evidently the number of childhood diseases contracted by a pupil has nothing to do with his mean achievement ratio.

This is probably due to the fact that most childhood diseases have been contracted by these pupils studied several years ago. Any effect caused by the childhood diseases would probably make itself felt

at the time, and would progressively decrease as more time elapsed. The pupils studied here probably had the childhood diseases so long ago that little effect on their present achievement ratios could be noticed.

These findings concerning the relation of pupils health and childhood diseases to achievement ratio are in general agreement with those of Conklin.[178]

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178 Conklin, Agnes, op. cit. p. 116.

THE RELATION OF ACHIEVEMENT RATIO TO PARENTS' HEALTH

The questionnaire administered to every pupil asks whether their mother's health is good and whether their father's health is good. The great majority of the pupils (470) said that both their mother's and father's health is good, 53 pupils say they have parents, one whose health is good and one whose health is poor, 26 pupils have only one parent living whose health is good, and the remaining pupils have parents both of whose health is poor. Table 46 shows that the distribution is definitely skewed to the right because of the considerable number of pupils both whose parents' health is good. This is true for boys and girls as well as for the total group.

The F test for this relationship yields a value of 6.03% which is significant at the one per cent level. This F indicates that pupils who have parents whose health is poor have significantly higher mean achievement ratios than pupils who have parents whose health is good.

Reference to Figure 31 brings out this point. The pupils who have parents both of whose health is poor have a definitely higher mean achievement ratio than any of the other three groups of pupils. This is true for both the boys, girls, and the total group.

The relationship which exists between high achievement ratio and parents' poor health may be accounted for in this way. These pupils who have parents whose health is decidedly poor probably are stimulated by necessity to work as hard as they can in and out of school so that they may be able to take over the burdens of their parents. Then, too,

these pupils whose parents have poor health may be given a greater appreciation of the advantages of an education than pupils who do not have this handicap. In all probability, however, this is merely another instance or indication that possession of a handicap tends to make the possessor of that handicap work harder to overcome it than he ordinarily would; and, in so working to overcome the handicap, his mean achievement ratio is increased.

TABLE 46.

DISTRIBUTION OF ACHIEVEMENT RATIOS ACCORDING TO PARENTS HEALTH GIVING THE MEANS FOR BOYS AND GIRLS SEPARATELY.

chievement Ratio	PARENTS' HEALTH				
	Both Parents Health Good	One Good One Poor	Both Poor	One Parent Dead	Total
0 to 19		2			2
to 9	30	6	6	7	49
9 to 0	108	28	6	7	149
19 to -10	57	15	3	8	83
29 to -20	8	2		3	11
39 to -30	2			1	3
N	203	53	15	26	297
M	-7	-7	-3	-9	-7
irls N	112	20	6	16	154
M	-8	-9	-7	-11	-9
oys N	91	33	9	10	143
M	-6	-6	-1	-5	-5

F(total group) = 6.923; p = .01-

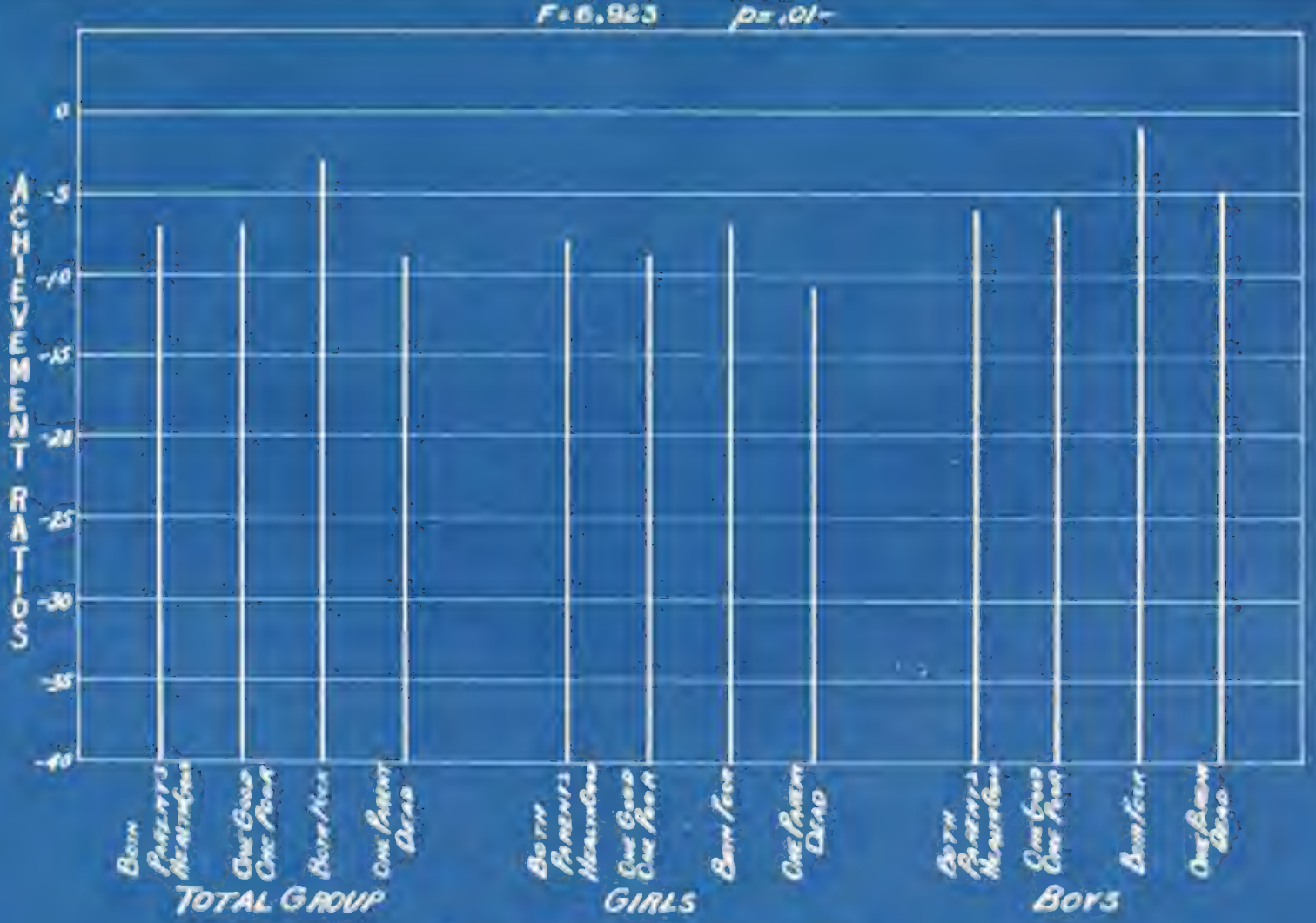

FIG. 31

ACHIEVEMENT RATIOS AND PARENTS HEALTH

[illegible]

A close study of the physical reports and [illegible] was made to determine the physical defects of every child covered in the investigation. It is observed that 194 of 297 cases have no physical defects; 48 have slight defects, 11 have tooth and throat defects, 27 are either over or under weight, and the remainder (11) have miscellaneous defects. Only a small minority (16) of the pupils have more than one defect. Table 46 lists the data collected on this variable.

The F test yielded a value of [illegible] which was not significant. There is no significant relationship between achievement ratio and the possession of physical defects for the group as a whole.

Reference to the graphic illustration Figure 51 shows that having tooth and throat defects has a tendency to reduce the achievement ratio, and having sight and weight defects has a tendency to increase the achievement ratio.

Possession of certain physical defects has little effect on the achievement ratio of superior pupils. This finding is in general agreement with that of Eckert and Mills.[176]

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176 Eckert, Ruth E. and Mills, Henry C., "Variations among High School Seniors in Physical and Performance Measures." School Review 44; 276-282. April, 1936.

TABLE 46

DISTRIBUTION OF ACHIEVEMENT RATIOS ACCORDING TO PUPILS' PHYSICAL DEFECTS, GIVING THE MEANS FOR BOYS AND GIRLS SEPARATELY.

Achievement Ratio		PUPILS' PHYSICAL DEFECTS					
		None	Sight Only	Tooth & Throat Only	Weight Only	Misc.	Total
10 to 19		1	1				2
1 to 9		31	6	3	3	6	49
-9 to 0		93	21	10	12	13	149
-19 to -10		57	8	[illegible]	5	5	83
-29 to -20		10	0	1			11
-39 to -30		2	0	1			3
	N	194	36	23	20	24	297
	M	-8	-5	-8	-6	-5	-7
Girls	N	107	14	16	11	6	154
	M	-9	-10	-10	-5	-9	-9
Boys	N	87	22	7	9	18	143
	M	-6	-3	-5	-7	-2	-5

F(total group) = 2.217. p = .05 +

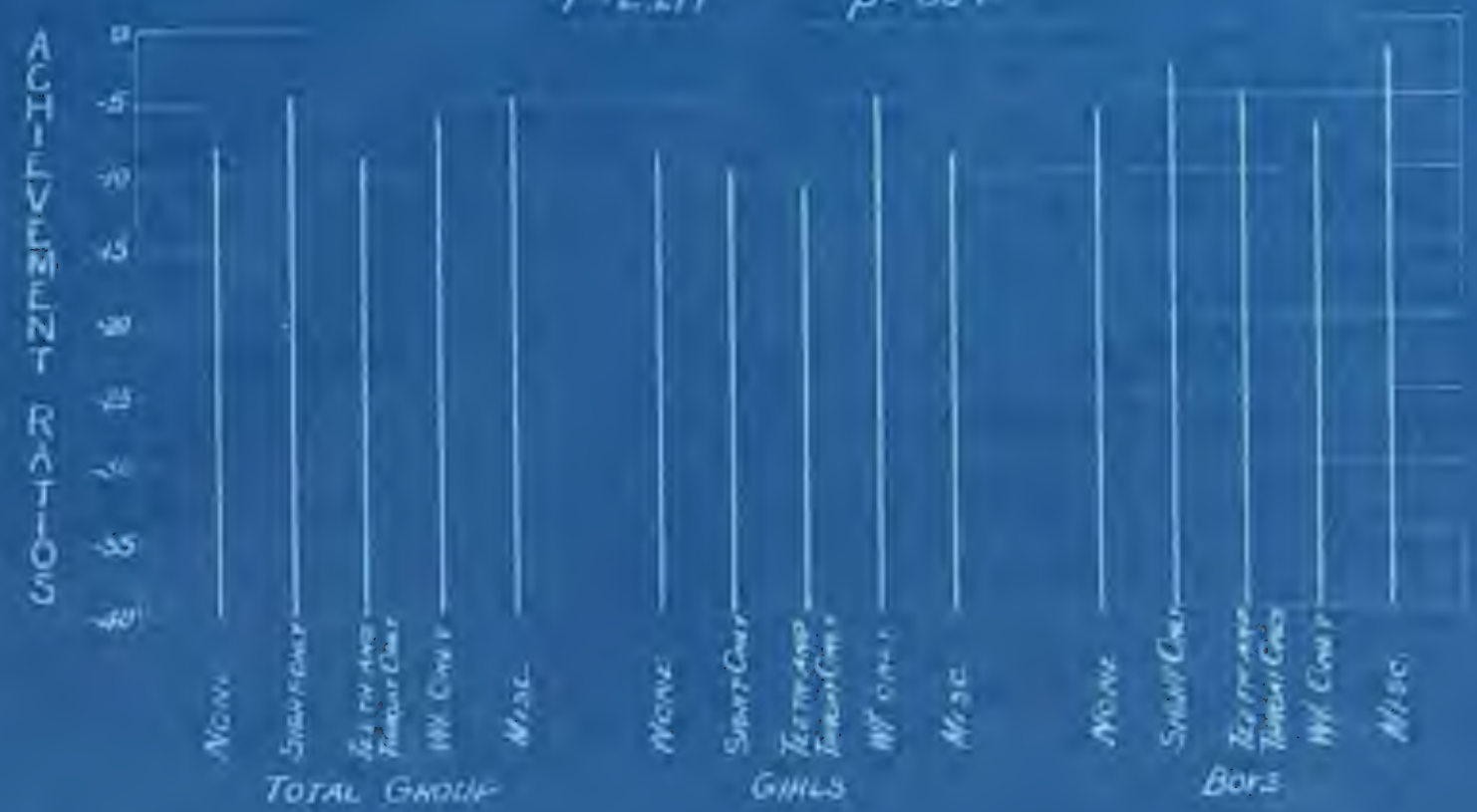

FIG. 24

ACHIEVEMENT RATIOS AND PUPILS PHYSICAL DEFECTS

THE RELATION OF ACHIEVEMENT RATIO TO HOME DISCIPLINE

The data on this relationship was acquired from the questionnaire in which the pupils are asked which methods are used at home to discipline. It was discovered that the majority (121) of pupil's parents use the method of depriving the pupils of privileges. 67 parents lecture the pupils, 23 parents use a combination of the first two. 10 parents use whipping as a method of discipline, 36 use nothing as a method of discipline, and the remainder use miscellaneous forms of discipline. The frequency distribution, as shown in Table 47 is heavily skewed to the right for boys, girls, and the total group.

The F test yielded a value of 8.546 which was significant at the 1% level. There is less than one chance in a hundred that no relationship existed between home discipline and achievement ratio.

The graphic illustration Figure 33 indicates that the pupils who are deprived of privileges by their parents as a method of punishment have a lower mean achievement ratio than the pupils who are lectured or punished in any other way. Those pupils who receive no punishment at all rank just above them in mean achievement ratio.

Surprisingly enough, the method of discipline used by parents most closely associated with pupils' high achievement ratios is whipping, closely followed by lecturing. Apparently low achievement ratio is associated with depriving of privileges or no home discipline at all, and high achievement ratio is associated with whipping and lecturing. It would seem that the more disagreeable the punishment or discipline the more the superior pupil is stimulated to perform up to

the premise of the investigation.

When only the girls are observed it is noticed that the various types of home discipline have little effect upon their achievement ratio. With boys the difference between the mean achievement ratio of the group who are whipped and the group who are deprived of privileges is even more pronounced in favor of the former.

Dealey's[177] investigation led her to the conclusion that parents consistently indicate the most frequent types of punishment to be deprivation, reproval, and corporal punishment, in the order named. The findings of this study are in direct agreement on this point. Dealey also found that children who were problems at school were more frequently punished at home. Our findings do not indicate that any method of discipline is associated with superior achievement.

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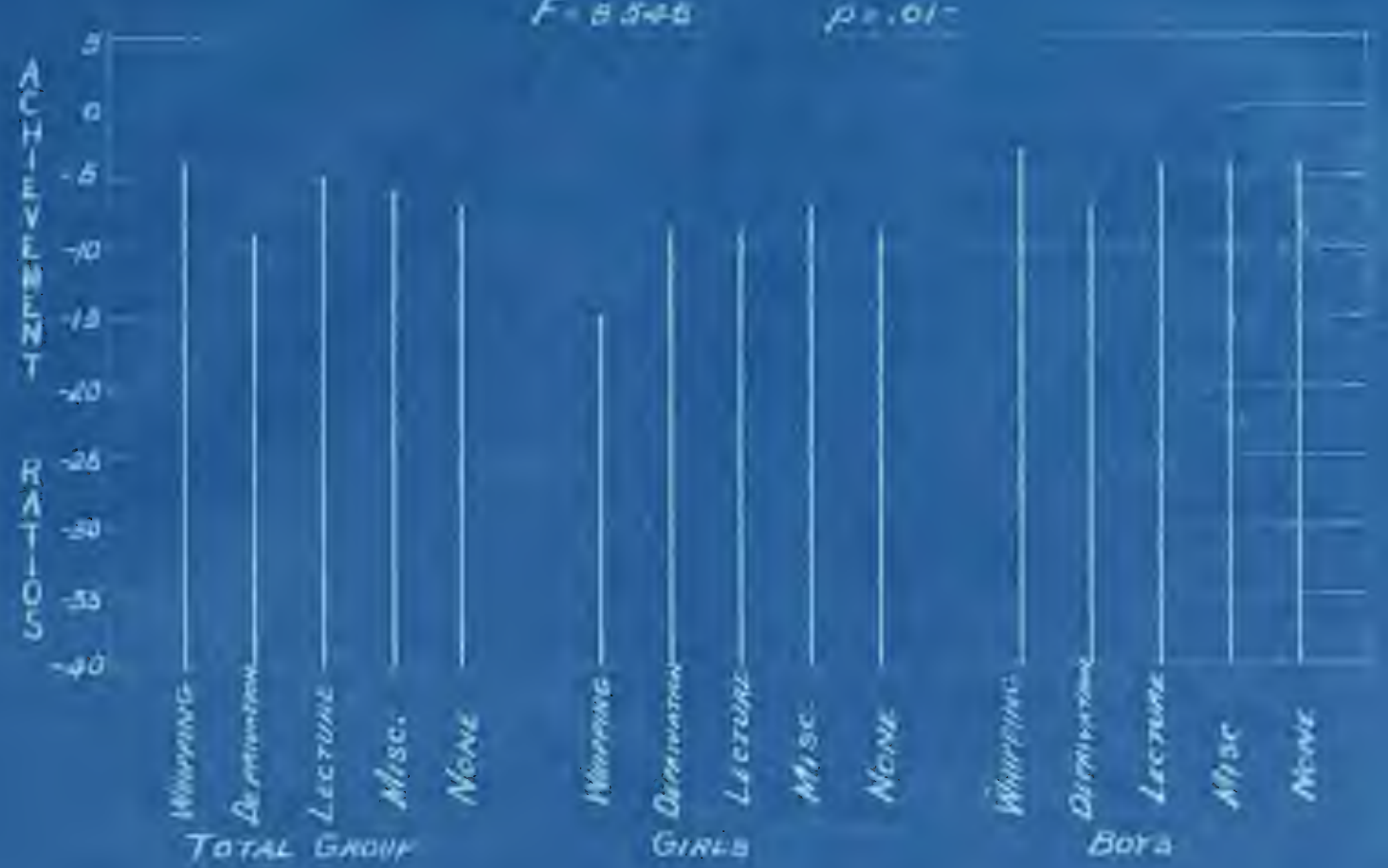
177 Dealey, Eleanor F. op. cit. pp. 131, 144.

TABLE 47

DISTRIBUTION OF ACHIEVEMENT RATIOS ACCORDING TO HOME DISCIPLINE, GIVING THE MEANS FOR BOYS AND GIRLS SEPARATELY

Achievement Ratio		HOME DISCIPLINE					
		Whipping	Deprivation of Privileges	Lecturing	Misc.	None	Total
0 to 19				1	1		2
to 9		4	19	10	10	6	49
to 0		3	67	43	17	19	149
9 to -10		3	48	12	10	10	83
9 to -20			7	1	2	1	11
9 to -30			3				3
	N	10	144	67	40	36	297
	M	-4	-9	-5	-6	-7	-7
rls	N	1	79	37	18	19	154
	M	-15	-9	-9	-7	-9	-9
ys	N	9	65	30	22	17	143
	M	-3	-7	-4	-4	-4	-5

F(total group) = 8.646. p = .01-



ACHIEVEMENT RATIOS AND HOME DISCIPLINE —

FIG 33

THE RELATION OF ACHIEVEMENT RATIO TO PARENTS WORKING

The achievement ratios for the pupils are compared under these headings: pupils whose fathers only are working, pupils whose mothers only are working, pupils whose mothers and fathers both are working, pupils who have an one in the family working, pupils who have no parents but relatives working, and the pupils who have both parents and relatives working. Table 42 indicates that the distribution is skewed to the left for both boys and girls as well as the total group.

The F test for this relationship yielded a value of 2.126 which is not significant.

For all of the above listed classifications from homes in which no one is working to homes in which parents and one or more relatives are working, there is little difference in the mean achievement ratios of the groups. As illustrated in Figure 54 there is no relationship either between the number of people in the home working and the achievement ratio for the group as a whole as well as for boys and girls.

The fluctuation in mean achievement ratio for some of the categories shown where either boys only or girls only were considered may be discounted because of the paucity of cases in these categories.

Apparently, whether or not everybody or nobody in the family, which was broken or intact, worked, has little effect on the achievement ratio of the pupils studied.

TABLE 48

DISTRIBUTION OF ACHIEVEMENT RATIOS ACCORDING TO PARENTS WORKING, GIVING THE MEANS FOR BOYS AND GIRLS SEPARATELY.

	PARENTS WORKING						
Achievement Ratio	None	Father only	Mother only	Mother and Father	Relative only	Parent and Relative	Total
to 19		2					2
to 9	3	23	1	3	3	16	49
to 0	8	73	1	11	8	47	148
9 to -10	4	37	3	4	6	28	82
9 to -20		5	1	1		3	10
9 to -30		2			1		3
N	15	142	6	19	18	94	294
M	-6	-7	-7	-7	-8	-7	-7
irls N	9	74	4	10	8	47	152
M	-10	-8	-3	-10	-9	-8	-9
oys N	6	68	2	9	10	47	142
M	0	-6	-15	-3	-8	-5	-5

F (total group = 2.126. $p < .05$.

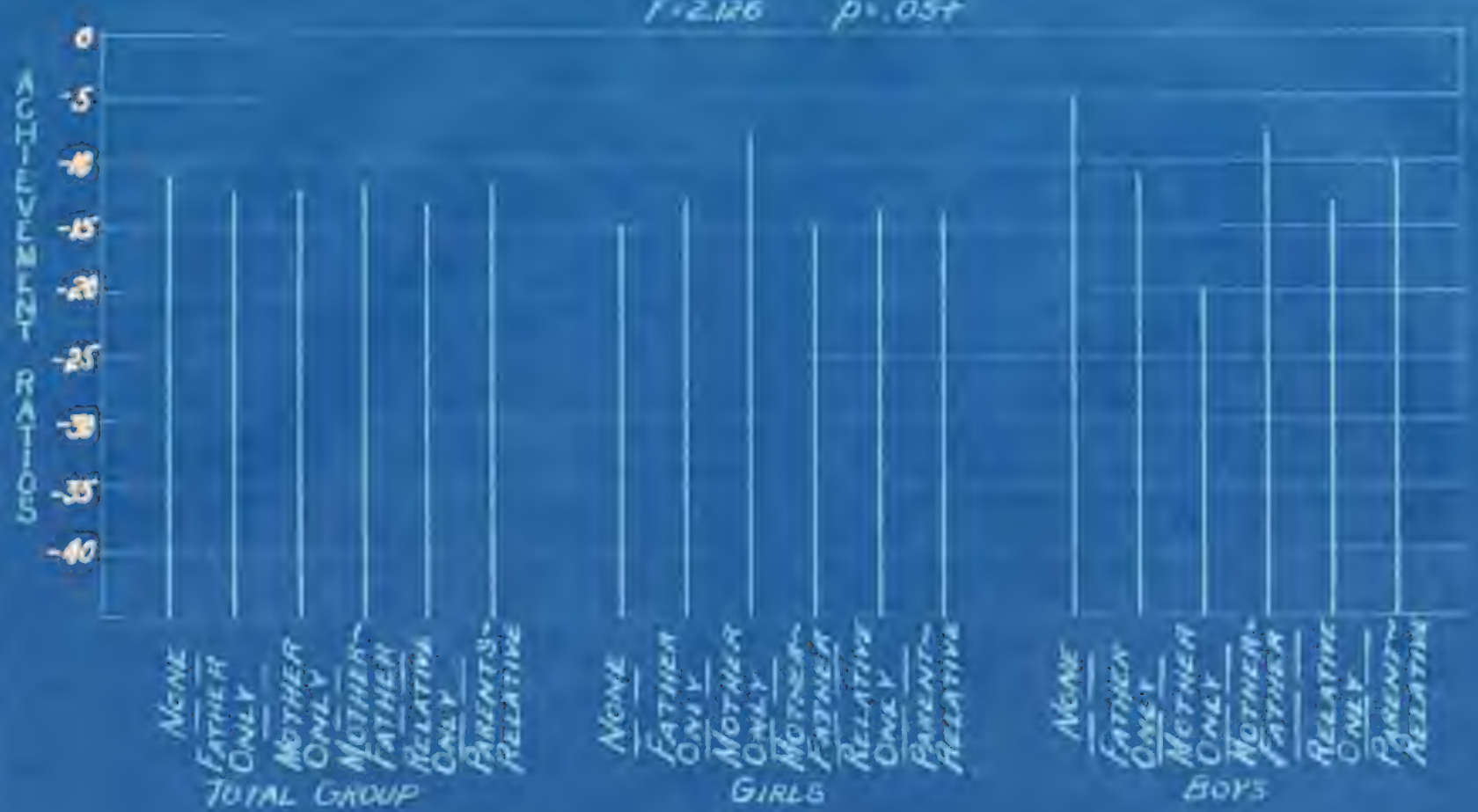


FIG. 34

ACHIEVEMENT RATIOS AND PARENTS WORKING

THE RELATION OF ACHIEVEMENT RATIO TO BROWN STUDY HABITS TOTAL SCORES

A discussion of the Study Habits Inventory by C. Gilbert Brown has already been included in Chapter II, p. 51. Briefly, the Brown Study Habits Inventory is "a list of statements of situations, habits, and conditions which may affect the use of study time, and consequent success in school work and study."[178]

The frequency Table 42 gives the distribution of the study habits scores for the 297 pupils studied. The distribution approaches a normal one, but is a bit skewed to the left. According to Brown, a negative score on the Brown Study Habits Inventory indicates poor study habits, a positive score indicates good study habits, and a high positive score indicates very good or excellent study habits. 54 pupils received negative study habits scores, while the remainder (243) received positive study habits scores.

The t test for the distribution yielded a value of 3.47C which was significant at the one per cent level. Evidently a relationship exists between the Brown study habits scores and achievement ratio.

Reference to Figure 35 indicates that this relationship is positive. Very low achievement ratios are associated with very poor Brown study habits scores, and very high achievement ratios are associated with very good Brown study habits scores. The great majority of the pupils who fall between the two extremes of high and low study habits scores vary little in mean achievement ratio. This relationship is true for the

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178 Brown, C. Gilbert and McKeown, R.E., Study Habits Inventory. Stanford University Press, Revised, November 1936, p. 1.

boys and girls as well as the total group.

Figure 35 and Table 49 show rather clearly that the majority of pupils who have the poorest and the best study habits as well, are girls. The girls who have good study habits are very good and when they have bad study habits they are very, very bad. The boys in general tend to avoid the extremes. The relationship which exists between study habits scores and achievement ratio can be accounted for very easily.

It is something of a surprise to find that the relationship which exists between study habits scores and achievement ratio is not more marked than it is. One would naturally expect that those pupils who have the best study habits would be more likely to make higher achievement ratios. It is only natural to expect that such a relationship would exist as the two variables seem to be so closely related. There is nothing in this study habits inventory to indicate how much time a pupil spends on his lessons. It might be possible for a pupil with poor study habits but who spends a great deal of time on his school work to actually achieve more than pupils who have good study habits but who spend little time with their school work. This may account for the fact that the relationship between study habits scores and achievement ratio is not more marked than it is.

These findings are in general agreement with those of Brem[129] and Deeling.[130]

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129 Brem, C. Gilbert, "Aiding the Fit", Journal of Higher Education, 6:415-20, October, 1935.

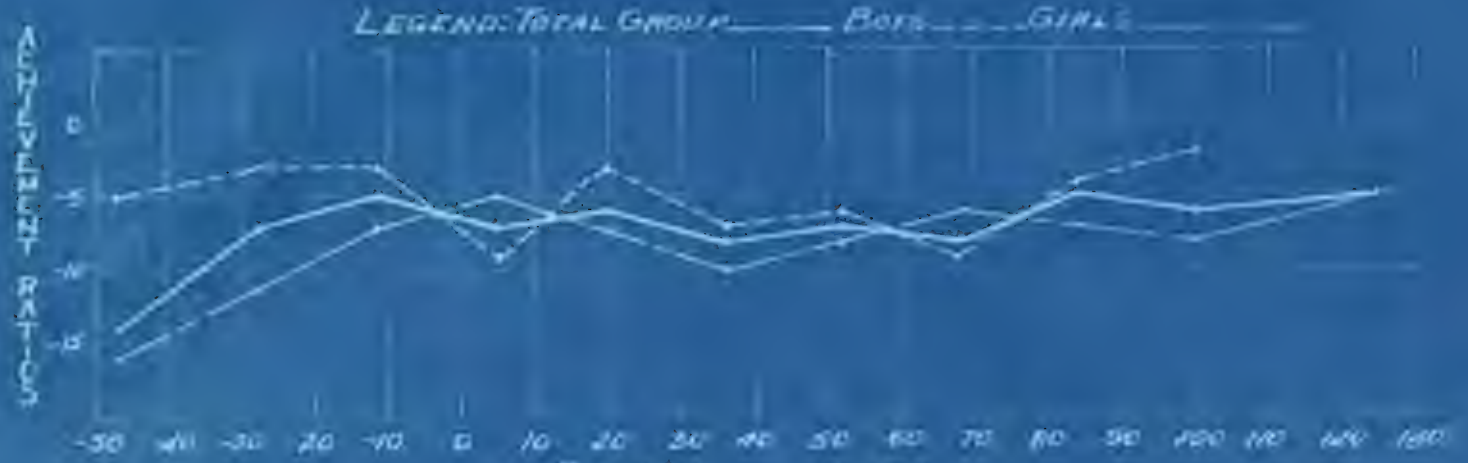
130 Deeling, Minerva F., op. cit., p. 21.

TABLE 40

DISTRIBUTION OF ACHIEVEMENT RATIOS ACCORDING TO USEFUL STUDY HABITS TOTAL SCORES, GIVEN FOR HIGH FOR BOYS AND GIRLS SEPARATELY

	BASES		ACTUAL		HABITS	TOTAL		SCORES				
Achievement Ratios	-35 to -24	-23 to -13	-12 to -5	-4 to -12	13 to 23	24 to 44	45 to 60	61 to 76	77 to 92	93 to 108	109 to 140	Total
15 to 19								2				2
1 to 9	1	2	4	1	10	7	2	6	7	2		40
-4 to 0	2	11	15	18	21	21	19	24	10	5	3	149
-19 to -10	4	4	2	8	11	16	15	9	6	5		85
-29 to -30	1	1	1	1	2	5		5				11
-37 to -50	1							2				3
N	10	15	22	30	45	49	42	45	25	10	3	297
M	-14	-7	-6	-7	-3	-3	-7	-8	-3	-6	-6	-7
Girls N	8	10	11	13	21	23	22	21	10	7	3	154
M	-16	-11	-7	-5	-7	-10	-8	-5	-7	-8	-5	-9
Boys N	2	5	11	17	17	26	20	24	15	3		143
M	-4	-3	-4	-3	-3	-7	-6	-9	-4	-3		-5

F (total group) = 3.832; p = .01-



$F = 3.332$ $p = .01$

WRENN STUDY HABITS SCORES

FIG. 35

ACHIEVEMENT RATIOS AND STUDY HABITS

VII CONCLUSIONS

A. Summary of the Relationships Found between Achievement Ratio and the Experimental Variables.

B. Implications for Further Research.

C. Bibliography.

A. Summary of the Relationships Found between Achievement Ratio and the Experimental Variables.

1. There is a considerable lag between promise and performance in school for the average pupil of superior intelligence. The majority of superior pupils are not accomplishing nearly as much in school as they are able to accomplish.

2. The lag between promise and performance for boys of superior intelligence is less than that for girls; i.e., the achievement ratio for superior boys is higher than that for superior girls.

3. The superior girls as a group are better adjusted socially and emotionally than are the superior boys.

4. Low achievement ratio is associated with intermediate, average, or normal personality adjustment for pupils of superior intelligence.

5. Poor personality adjustment is associated with highest achievement ratio, and best personality adjustment is associated with high average achievement ratio. The relation existing between personality and achievement is not positive, but tends to be negative. Pupils of superior intelligence who have well adjusted personalities have an advantage in academic competition over pupils with average personality adjustment, but pupils with poor personality adjustment have an advantage in achievement ratio over both the well adjusted and the average adjusted groups.

6. Of all the personality traits studied, truthfulness is the only one positively associated with achievement ratio. Truthful pupils are more likely to have high achievement ratios than untruthful pupils.

7. The relations to achievement ratio of such personality traits as happiness, alienation, sympathy, control, self-determination, economic self-determination, and particularly adjustment to the opposite sex all tend to be negative for superior pupils.

8. Superior pupils of high socio-economic status have an advantage in achievement ratio over pupils of low socio-economic status.

9. The lag between promise and performance of superior pupils of foreign extraction is less than that for pupils of native extraction.

10. Pupils in whose homes foreign languages are spoken have an advantage in achievement ratio over pupils in whose homes only English is spoken.

11. Pupils whose antecedents were born in Poland have, in general, an advantage in achievement ratio over pupils whose antecedents were born in Germany, Russia, or the United States.

12. In general, pupils whose parents and grand parents came from foreign countries consistently exceed the mean achievement ratio of pupils whose parents and grandparents came from the United States.

13. There is a positive association between achievement ratio and the amount of formal education of the pupils father. This association exists but it is not so well marked for the amount of formal education of the pupil's mother.

The relation between achievement ratio and parents education is much greater for girls than it is for boys.

14. Superior pupils from small families of one or no siblings have an advantage in achievement ratio over pupils from large families.

16. Either the oldest or the youngest or only child siblings have an advantage in achievement ratio over the intermediate siblings.

18. Girls from metropolitan areas have an advantage in achievement and ratio over girls from rural areas.

17. Superior pupils particularly boys from broken families have an advantage in achievement ratio over pupils from intact families.

18. There is little relation between achievement ratio and pupils' health, number of diseases contracted, and physical defects. Certain throat and tooth defects have a slight influence on achievement ratio, reducing it a trifle.

19. Pupils whose parents health is poor are likely to have higher achievement ratios than pupils whose parents' health is good.

20. Pupils who are deprived of privileges by their parents as a method of discipline have lower achievement ratios than pupils who are lectured, chipped or punished in any other way. Pupils who are whipped had a higher mean achievement ratio than any other group.

21. Whether everybody or nobody in a family which is broken or intact, works, has little effect on the achievement ratio of these superior pupils studied.

22. Good study habits are associated with high achievement ratio and poor study habits are associated with low achievement ratio for superior pupils - but the association is not of great degree.

A single thread appears to bind many of these conclusions together. Often wherever a pupil of superior intelligence is found with a handicap such as that of coming from a broken family, being of foreign extraction, having parents with poor health or showing poor personality adjustment,

he works harder in school to overcome this handicap, and consequently his achievement ratio increases. In some cases, of course, this will not account for the existing relationship and other things may be responsible.

2. Implications for Further Research.

Considerable additional information has been gathered covering a large number of facts about this group of pupils with superior intelligence. The information covers 66 variable factors which may or may not be related to the achievement of superior pupils. At some future date, this same material may be used to compare the variables with one another or to compare all the variables with some variable besides achievement ratio.

A number of factors have been shown to be associated with the achievement ratio of superior pupils. Certain other variables have been found to show little or no relationship with the achievement ratio of superior pupils. On the basis of this study, it would seem worthwhile to investigate these relationships more thoroughly. The present research shows only that such a relationship is present. Further research might be helpful in determining the degree and reasons for these significant relationships.

Other investigators may be interested in pursuing the investigation of the relationship to achievement of the conglomeration factor sometimes called drive. There is evidently some third group of related variables besides intelligence and personality which has a direct effect on the achievement of not only superior pupils, but all pupils. Further research will tend to clear up just what this influence may be.

Further research concerning how the school may better provide for the intellectually superior pupil could be based on such research as

has been done in this volume. Applications of the truths concerning the factors associated with good achievement of superior pupils would be helpful. The school would not only like to know what factors are associated with the achievement of superior pupils, but would also like to know what program would encourage the development of these factors positively associated with achievement.

The pupil of superior intelligence deserves special attention. Particularly in a democracy, the general level of learning of the population is no better than the level of the intellectual leaders. Tremendous efforts have been made to improve the achievement and learning level of the lower ability groups and so to bring up the average level of the whole population. This is very desirable; but the same attention, if given to pupils of superior ability, would yield results tenfold in value. The fertile soil of the superior child should not be neglected for the stony land of the low ability children. We are never any better than our leaders, and we should learn to train our best to be leaders.

Finis.

BIBLIOGRAPHY

1. Anonymous. "Characteristics of Superior Students." N.E.A. Research Bulletin, 19:158-162, September, 1941.

2. Bacon, Francis L. "The Study Habits of Excellent and Deficient Pupils." Bulletin of the Dept. of Sec. School Principals, 40:107-115, March, 1932.

3. Baker, Harry J. Characteristic Differences in Bright and Dull Pupils. Public School Pub. Co., Bloomington, Ill., 1927. 118 pp.

4. "Baltimore Program of Education for Pupils of Superior Ability," Baltimore Bulletin of Education. 18:1-46. Sept.-Oct., 1940.

5. Bell, Howard M. Youth Tell Their Story. American Youth Commission, American Council on Education, Washington, D. C., 1938. 275 pp.

6. Bentley, John Edward. Superior Children. W. W. Norton and Company, New York, 1937. 331 pp.

7. Bolzau, Emma L. "Methods Used with a High Ability Group." Social Studies, 29:255-258, October 1938.

8. Burks, Barbara Stoddard and others. The Promise of Youth: Follow Up Studies of a Thousand Gifted Children: Genetic Studies of Genius 3. Stanford University Press, California, 1930. 508 pp.

9. Bursch, James F. "Home and Community Conditions Related to Pupil Maladjustment." Personality Adjustment of the Elementary School Child, Natl. Elem. School Principal, Bull. of the Dept. of Elem. School Prin., N.E.A. 15:320-323, July, 1936.

10. Clark, E. L. "Family Background and College Success." School and Society, 45:237-238, February 19, 1937.

11. Cohen, Helen Louise. "The Program for Gifted Pupils in New York City." English Journal, 26:548-556, September, 1937.

12. Conklin, Agnes. Failures of Highly Intelligent Pupils, A Study of Their Behavior by Means of the Control Group. Teachers College, Columbia Univ., Columbia Bur. of Publications #792, 1940, 250 pp.

13. Cox, C. M. and others. The Early Traits of Three Hundred Geniuses: Genetic Studies of Genius 2. Stanford University Press, California, 1926. 842 pp.

14. Coy, Genevieve. The Interests, Abilities, and Achievement of a Special Class for Gifted Children. Teachers College, Columbia University, Columbia Bureau of Publications, 1923. 194 pp.

BIBLIOGRAPHY (continued)

15. Dosing, Minerva F. The Relation of Certain Pupil Achievement Gains to Certain Personal and Environmental Elements. University of Pennsylvania, Dissertation, Philadelphia, 1940, 169 pp.

16. Douglass, Earl R. and Campbell, Lna. "Factors Related to Failure in a Minneapolis Junior High School." Elementary School Journal, 37:186-189, November, 1936.

17. Drake, M. J., Roslow, S., and Bennett, G. K. "The Relationship of Self-Rating and Classmate Rating on Personality Traits." Journal of Experimental Education 7:210-213. March , 1939.

18. Eckert, Ruth E. and Mills, Henry C. "Patterns of High School Performance." Studies in Articulation of High School and College, University of Buffalo Studies, Series 2, Vol. 13, No. 4, 1936. pp. 127-180.

19. Eckert, Ruth E. and Mills, Henry C. "Variations Among High School Seniors in Promise and Performance Measures." School Review, 44: 274-282. April, 1936.

20. Finch, F. H. and Nemzek, C. L. "The Relationship of the Bernreutter Personality Inventory to Scholastic Achievement and Intelligence." School and Society, 36: 594-596. November 5, 1932.

21. Francis, Kenneth V. and Filmore, Eva A. The Influence of Environment upon the Personality of Children. Univ. of Iowa Studies in Child Welfare, Vol. 9, No. 2. May 1, 1934. 186 pp.

22. Gehman, A. L. "Factors other than Intelligence Pertaining to School Success." The New Deal in Education, 21st Annual Schoolmen's Proceedings, University of Penn. Bulletin, 28:304-307. 1934.

23. Goddard, H. H. School Training of Gifted Children. World Book Co., Yonkers, N. Y., 1928. 226 pp.

24. Griffitts, Charles H. "The Influence of Family on School Marks." School and Society, 24:713-716. Dec. 4, 1926.

25. Hahn, Julia L. "The Hobby Clubs for Children with Special Gifts." Educational Method, 18:21-26, October, 1938.

26. Hollingsworth, Leta S. "An Enrichment Curriculum for Rapid Learners at Public School 500: Speyer School." Teachers College Record, 39:296-306. January, 1939.

27. Hollingsworth, Leta S. Special Talents and Defects: Their Significance for Education. Macmillan Co., New York, 1925, 218 pp.

BIBLIOGRAPHY (continued)

28. Hollingsworth, Leta S. Gifted Children: Their Nature and Nurture. Macmillan Co., N. Y., 1926. 374 pp.

29. Hollingsworth, Leta S. Special Talents and Defects. Macmillan Co., N.Y. 1923, 216 pp.

30. Jones, Edward S. A Charter for the Superior Student. University of Buffalo Studies, Vol. 10, No. 3, Buffalo, N. Y. January, 1936. 87 pp.

31. Jones, Harold E. "Relationships in Physical and Mental Development." Review of Educational Research, 9:97-102, 134-137, February, 1937.

32. Keal, Henry M. "Mental Ratings, Scholarship, and Health." School and Society, 28: 277-280. September 1, 1928.

33. Lamphear, Prudence T. "What Cleveland is Doing for Superior Pupils." English Journal, 26: 723-728. November, 1937.

34. Lindquist, E. F. Statistical Analysis in Educational Research, Houghton, Mifflin Co., New York, 1940. 266 pp.

35. Link, H. C. "A Test of Four Personality Traits of Adolescents." Journal of Applied Psychology, 20: 527-534. 1936.

36. Link, H. C. and others. Inventory of Activities and Interests (for boys and young men, for girls and young women.) The Psychological Corp., New York. 1938. 4 pp. ea.

37. Link, H. C. and others. Manual for the P. Q. or Personality Quotient Test (Inventory of Activities and Interests). The Psychological Corporation, New York, 1938. 14 pp.

38. Lund, Frederick H. "Sex Differences in Type of Educational Mastery." Journal of Educational Psychology, 33: 321-330. May, 1932.

39. Merrill, Maud A. "The Significance of I. Q's on the Revised Stanford-Binet Scales. Journal of Education Psychology, 29: 641-651. December, 1938.

40. Myers, Charles E., Ruch, Giles M. and Loofbourow, Graham C. Myers-Ruch High School Progress Test: Form Am. World Book Co., Yonkers-on-Hudson, N. Y. 1938. 8 pp.

41. Myers, Charles E., Ruch, Giles M. and Loofbourow, Graham C. Myers-Ruch High School Progress Test: Manual of Directions. World Book Company. Yonkers-on-Hudson, N. Y. 1938, 8 pp.

42. Monroe, Walter S. Encyclopaedia of Educational Research, Macmillan Co., New York, 1344 pp.

BIBLIOGRAPHY (continued)

43. Osburn, W. J. and Rohan, B. J. Enriching the Curriculum for Gifted Children. Macmillan Co., New York, 1931. 408 pp.

44. Paterson, Donald G. Physique and Intellect. The Century Company, New York, 1930. 304 pp.

45. Payne, Arthur F. and Perry, James D. "The Intelligence Ranking of [illegible] City College Honor Students." School and Society, 42: 383-384. September, 1935.

46. Paynter, Richard H. and Blanchard, Phyllis. Educational Achievement of Problem Children. Commonwealth Fund, New York, 1929. 72 pp.

47. Pintner, Rudolph. "Intelligence Tests." Psychological Bulletin, 33:453-472. July, 1936.

48. Poffenberger, A. T. and Carpenter, Florence L. "Character Traits in School Success." Journal of Experimental Psychology, 7:67-74. February, 1924.

49. Regensburg, Jeannette. Studies in Educational Success and Failure in Supernormal Children. Archives of Psychology 129, New York, May, 1931, 150 pp.

50. Rothney, J. W. and Roens, B. A. "Applications of Personality and Character, Measurement." Review of Educational Research, 11: 92-108, February, 1941.

51. Ryans, D. G. "A Tentative Statement of the Relation of Persistence Test Scores to Certain Personality Traits as Measured by the Bernreuter Inventory." Pedagogical Seminary and Journal of General Psychology, 54: 229-34. March, 1939.

52. Sims, V. M. Score Card for Socio-Economic Status, Form C. Public School Publishing Co., Bloomington, Ill. 1927. 4 pp.

53. Sims, V. M. Score Card for Socio-Economic Status: Manual of Directions. Public School Publishing Company, Bloomington, Ill. 1927, 12 pp.

54. Smith, Harry P. "Factors Related to Academic Achievement." Practical Value of Educational Research, American Educational Research Association Report, pp. 25-25. May, 1933.

55. Sones, W. D. and Harry, David P. Sones-Harry High School Achievement Test: Manual of Directions, World Book Co., Yonkers-on-Hudson, New York, 1929. 16 pages.

56. Sones, W. D. and Harry, David P. Sones-Harry High School Achievement Test: Form A. World Book Co., Yonkers-on Hudson, New York, 1929, 26 pages.

BIBLIOGRAPHY (continued)

57. Stagner, Ross. "The Relation of Personality to Academic Aptitude and Achievement". Journal of Educational Research, 26:648-660 May, 1933.

58. Starrack, J. A. "Matching Ability with Achievement". Journal of Higher Education, 8:315-320, June, 1937.

59. Stedman, Lulu M., Education of Gifted Children. World Book Company, Yonkers-on-Hudson, New York, 1924. 190 pp.

60. Steere, E. J., "The Effect of Character Traits on Scholastic Achievement". School and Society, 29: 707-708. June 1, 1929.

61. Strabel, Eunice, "Academic Success of Various Age and Experience Groups". Studies in Articulation of High School and College, University of Buffalo Studies, Series 2, Vol. 13, Bull. 3, 1936.

62. Stroud, J. B., "Application of Intelligence Tests." Review of Educational Research, 11:25-41. February, 1941.

63. Terman, Lewis M. and others. Mental and Physical Traits of One Thousand Gifted Children; Genetic Studies of Genius 1. Stanford University Press, California, 1925. 648 pp.

64. Thompson, W.A., "An Evaluation of the P.Q. (Personality Quotient) Test". Character and Personality, 6: 274-292. June, 1938.

65. Traxler, A. E., "Current Construction and Evaluation of Personality and Character Tests". Review of Educational Research, 11:67-79. February, 1941.

66. Turney, Austin Henry, "Intelligence, Motivation and Achievement". Journal of Educational Psychology, 22:426-434. September, 1931.

67. Washburne, John N., Washburne S-A Inventory. World Book Co., Yonkers-on-Hudson, New York, 1940. 8 pp.

68. Washburne, John N., Washburne S-A Inventory (Thaspic Edition): Manual for Interpreting. World Book Company, Yonkers-on-Hudson, New York, 1940. 22 pp.

69. Williams, J. Harold, "The Socially Maladjusted". Review of Educational Research, 11:295-305. June, 1941.

70. Williamson, E. G. "The Significance for Educational Guidance of Personal Histories". School Review , 44: 41-45, January, 1936.

BIBLIOGRAPHY (Continued)

71. Witty, Paul, A Study of One Hundred Gifted Children. Bureau of School Service and Research, University of Kansas, Lawrence, Kansas, 1930. 44 pp.

72. Wrenn, C. Gilbert, "Aiding the Fit". Journal of Higher Education, 4:327-333. October, 1933.

73. Wrenn, C. Gilbert and Anderson, F. E., Study-Habits Inventory. Stanford University Press, California, 1934. 4 pp.

74. Wrenn, C. Gilbert and Anderson, F. E., Study-Habits Inventory: Manual of Directions. Stanford University Press, California, 1934. 8 pp.

75. Yarbrough, Harvey E. and Boardman, Thos K., "Solving Our Gifted Children". Journal of Educational Psychology. 30:100-108. October, 1939.

APPENDICES

Questionnaire

Vita

Master Chart

QUESTIONNAIRE

1. In what country were you born?_____.

2. In what country was your father born?_____.

3. In what country was your mother born?_____.

4. In what country was your father's father born?_____.

5. In what country was your father's mother born?_____.

6. In what country was your mother's father born?_____.

7. In what country was your mother's mother born?_____.

- - - - - - - -

8. Do you live with your mother?_____your father?_____.

9. Do you live with any other relatives besides brothers and sisters

_____.

10. Are you the only child?_____.

11. If not, how many younger brothers do you have?_____how many older_____.

12. How many younger sisters do you have?_____how many older_____.

13. In what place have you spent the greater part of your life?

Baltimore_____ a city_____ a town_____the country_____.

14. What foreign languages, if any, are spoken in your home?_____.

15. What time consuming activities have you engaged in outside school, such as paid employment, music lessons, other schooling, hobbies, play, church work, etc. be specific_____

_____.

16. In what kind of recreational activities in school and out do you enjoy participating_____

_____

17. Name places to which you have travelled outside Maryland_____

_____.

18. Have you any physical disabilities or handicaps? If so name them_____

_____

19. What kind of books do you like to read? Be specific and clear._____

_____

20. What member of the family do you like best?_____.

21. What member of the family do you like least?_____.

22. Are your parents rather strict with you when you do something wrong_____.

23. Do you dream often?_____occasionally?_____about the same thing more than once?_____.

24. Do your dreams frighten you?_____or do you like to dream?_____.

25. Do you day dream?_____What about?_____

_____

26. What church do you belong to?_____.

27. Do you take a part in church activities?_____if so list some_____

_____

28. Do you like school?_____Why?_____.

29. Do you intend to graduate from high school?_____.

30. How many half years have you failed? Name the grades_____.

31. How many half years have you skipped? Name the grades_____.

32. Have you ever gone to summer school?_____Advance?_____Review?_____.

33. Have you failed in any subject since you entered the 7B grade? If so name the grade and the subjects failed_____

_____

34. How many times have you been on the honor roll since you entered the the 7B grade_____.

35. Do you intend to go on to college if you can?_____.

36. What do you intend to do when your schooling is over?_____.

37. Name the members of your family who are engaged in gainful occupations

_____

38. How many times have you moved since you were born?_____.

39. How many elementary schools have you attended?_____.

40. How many junior high schools have you attended?_____.

41. How many senior high schools have you attended?_____.

42. Is your mother's health good?_____.

43. Is your father's health good?_____.

44. Name the illnesses you have had._____.

_____.

45. Do you wear glasses?_____Can you see well?_____.

46. Do you hear well?_____.

47. Have you ever been operated on?_____for what?_____.

48. Do you get along well with your brothers and sisters?_____.

49. Do your parents get along all right together?_____On speaking terms?____.

50. How are you punished when you displease your parents?_____

_____.

51. Do you have any bad habits?_____Name them_____

_____

52. Do members of your family have had habits?_____Name the person and the habits?_____

53. On the average, how many days a year have you been absent?_____.

54. How many terms in Junior and Senior high school have you received an unsatisfactory mark in conduct_____Effort?_____

55. Do you prefer men or women teachers?_____Why?_____

_____.

56. Name in order of importance to you, five traits of the good teacher, and five traits of the poor teacher.

	1	2	3	4	5
Good					
Poor					

57. Have you ever thought about running away from home?_____.

58. If you have been successful in school work, explain what you think has made you successful_____.

59. If you have ever failed in school work, list here the reasons you believe have caused your failure_____.

60. List the part time jobs you have had while you were attending school.

_____.

61. List the summer jobs you have had _____.

62. Do you do work around the house for which you are paid? Explain. _____

_____.

63. If you have earned money, do you keep it all yourself? _____.
What kinds of things do you spend it for? _____.

64. If you are given spending money, how do you spend it? _____.

65. Do you have a bank account? _____.

66. What household tasks do you perform at home? _____.

67. What grade did your father finish in school? _____.

68. What grade did your mother finish in school? _____.

69. Does anyone help you with your school work at home? _____
Who? _____

70. What part of this study do you like most and why? _____

_____ like least and why? _____.

Note: For pusposes of this study so that a complete picture of every pupil may be obtained, the investigator would like to have every question completely filled out truthfully to the best of your ability. If, however, for some reason you would rather not answer a question, leave it blank. Use the back of the sheet if you need more space for an answer.

FOLD OUT

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Gamma Form A

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Gamma Form A
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core

-Ruch Standard
core

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Failures in Semester

	Reading references (Code 1-)	Home Discipline (Code 1-5)	Dress (Code 0-4)	Church affiliation (Code 1-5)	School (Code 1-7)	Parents reading (Code 1-6)	Days Absent Previous semester	School Attendance IX (Code 1-9)	School attendance III (Code 1-6)	Willing Participation (Code 1-4)	Ad ditted Bad Habits (Code 1-5)	Preference for Teachers ax (Code 1-4)	Reasons for success in chool (Code 1-5)	easons for Failure in chool (Code 1-4)	Father's Education (Code 1-5)	Mother's Education (Code 1-5)	Extra Study Help (Code 1-4)	Conduct Effort in sc. chool (Code 1-5)	Vocational Choice (Code 1-6)
7 1		3	1	4-5	1-2-3	2-5		1-4-7	2	4	6	1	4	---	3	4	1-5	3
5	3-4	2	1-2-4	2-5	1-2-3	4-5	---	2-6-7	4	4	7	2	3	---	---	---	1-5	3
5	1	4	4	4-5	1-2-3	2	---	1-4-7	4	4	1	3	---	---	5	1	1-5	1
5	1	2	---	4-5	1-2	2	5	2-4-7	3	1	---	---	4	---	1	1	1-5	1
-5	1-3	2-3	4	4-5	1-2-3	4	---	1-4-7	---	1	7	1	---	---	1	1	1-5	1
5	---	---	1-2	4-5	1-2-3	2-5	---	2-4-7	3	4	6	2	---	---	3	2	1-5	3
5	1-3	3	4	3	1-2-3	2-5	---	1-4-7	---	4	1	3	4	---	2	2	1-5	5
5	1	3	1-4	4-5	1-2-3	2-5	0	1-4-7	3	4	5	3	1	2-3	---	---	1-5	3
5	1-3	2	4	4-5	1-2-3	2	---	1-4-7	4	4	1	2	4	---	3	2	1-5	1
5	1	2	1	3	1-2-	2	---	1-4-7	4	2	6	3	5	---	2	2	1-5	6
5	1-4	5	1-4	4	1-2-3	2	0	2-4-7	3	1	1	1	3	---	4	4	1-5	5
-7	1	2	1-4	4-5	2-3	2-5	9	1-4-7	5	4	---	2	---	2	2	3	1-6	3
-5	1	2	1-2-4	4	2-7	2-5	7	1-4-7	4	4	6	2	1	---	2	2	1-5	1

VITA

John William Musselman was born March 31, 1911 in Surry, Virginia. Later he attended the public schools of Baltimore and graduated from Baltimore City College in 1929. He attended Blue Ridge College and Western Maryland College, graduating from the latter in 1933 with an A. B. degree, qualified to teach science and mathematics in the high schools of Maryland. He taught one year in a St. Mary's County, Maryland high school, then ten years in the Baltimore High Schools as teacher and athletic coach of boxing and football. After two years as teacher-in-charge of a Junior High School annex, he became the Principal's Special Assistant and Dean of Boys at Southern Junior-Senior High School of Baltimore. He attended Johns Hopkins University from the summer of 1937 until the fall of 1941. His only published work to date is a summary of this dissertation under the same title in the Journal of Experimental Education.

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10-1-1954	Loyola College (Roesler Drive)